











MYOGRAPHIÆ COMPARATÆ
SPECIMEN:

O R, A
COMPARATIVE DESCRIPTION
OF ALL THE
MUSCLES
IN A
MAN, and in a QUADRUPED.

BY JAMES DOUGLAS, M. D.

A NEW EDITION, with Improvements.

To which is now added,

AN ACCOUNT OF THE
BLOOD VESSELS and NERVES.

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ADVERTISEMENT.

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Dr. Joseph A. Knell
THO' Dr. Douglas's Comparative
Myography has been published
about half a century, yet still it is
allowed to be one of the best books
on the subject: witness the character
given of it by an unexceptionable
judge in a very late work; Egregius
labor, etsi juventutis opus --- inter
compendia excellit *.

This edition is carefully printed
from that which the author publish-
ed in the year 1707. But the cor-
A 2 rections

* Vide HALLER. Comment: in Boerhaav.
method. stud.

ADVERTISEMENT.

rections and additions to the description of several muscles, which he afterwards printed in an appendix, are here inserted in their proper places ; and for the benefit of young anatomists, the synonymous names of the muscles, together with a few notes, are added at the foot of the page.

For their use, we have likewise added from ALBINUS's *Historia Musculorum*, the order in which the muscles may be most conveniently dissected in one subject ; and a list of them, according to their situation in the different regions of the body.

T H E

T H E

P R E F A C E.

*T*H^O' Myography has been often cultivated by industrious and good hands, yet it still affords a fertile field of reformation and improvement: of this, it is presumed, this small treatise will be sufficient evidence. Not that I lay claim to the vain presumption of having corrected all the mistakes, and supplied all the defects of those who have wrote upon this subject; that I leave to finishing hands.

I question not, but that I may be liable to correction in many things; or at least, that a better and more dexterous hand may rectify some of my descriptions.

The encouragement I had to publish these descriptions, was, that I took them all from the life; I mean, from ocular inspection in dissection; without taking any of them upon the credit of another. For

before I was determined, as to the origin, progress, and insertion of the muscles, I raised them on both sides of above twelve subjects, both fœtus's and adults; still committing to paper what I observed. I read often, and carefully perused all the authors that have wrote upon the muscles, from the immortal Galen down to this time; and after comparing all the descriptions one with another, I singled out such as I found conformable to the life; that being the standard I always go by; and according as that directed me, I have here rectified what I humbly conceived to be their mistakes, (but without mentioning them as their's) and supplied their defects as far as my observation went.

If any one has a mind to censure these descriptions as false, I only beg leave to acquaint him before hand, that I will always appeal to the ocular inspection of subjects, and if that gives it against me, I shall willingly retract and acknowledge my error. Whatever is offered against them, that is not accompanied with that, I shall pay but little regard to it. And to justify, in some measure, the conformity of these descriptions to exact observation and matter of fact, I still keep by me the half of one of my subjects, artfully prepared, which will afford me means of demonstration when a fresh subject is not at hand.

And

*And here I cannot but take notice, that in the many bodies I have viewed, I have not met with that frequency of *Lusus Naturæ*, that is so commonly talked of, especially by those who are loth to take the pains to make a strict and narrow inquiry in the dissection of these useful machines of motion. 'Tis true indeed, that nature does sometimes sport and vary in the composition of a muscle. Thus I have observed two *Palmares* in one hand; I have found three heads to the *Biceps Cubiti*, the uncommon head arising from the middle of the *Os Humeri*; I have seen one of the *Interossei* come from the upper part of the *Carpus* externally, &c. The other instances I could adduce, I refer to another occasion.*

As for the comparative part of this treatise, or the interlacing the descriptions of the human muscles with those of the canine, that I presume needs no apology. The many useful discoveries drawn from the dissection of quadrupeds, the knowledge of the true structure of divers parts of the body, of the course of the blood and chyle, and of the use and proper action of the parts that is chiefly owing to this sort of dissection: these, I say, give a warrantable plea for insisting upon it, though it may be censured by the vulgar.

As for what relates particularly to the muscles of a Dog, or that quadruped which I have chose for my subject, I was induced to make the parallel between those of a man, and those of that animal, by two reasons.

1. *One is the opportunity of shewing the contrivance and use of the muscles subservient to the peculiar motions of a dog, and such as its different way of living did necessarily require.*

For where Nature has acted uniformly, I am silent ; and that indeed is frequently met with, there being an exact similitude between the make and structure of many of the muscles of a man, and that of the corresponding muscles in a dog : but where any difference appears in respect of origin or insertion, it is there (and there only) that my comparative remarks take place.

2. *The other reason is taken from the benefit and conveniency of the young students of anatomy, who may readily procure so common a subject ; and if they once acquire a dexterity of raising the muscles in it, may promise themselves an equal ability in raising those of the human body, after the dissection of one, or two at most.*

Galen,

*Galen, the great head of the anatomical school, both practised himself, and recommended to his scholars, the frequent dissection of monkeys and apes, as highly conducive to a more perfect knowledge of the admirable structure of the organs of the human body. I do not affirm, as some would have it, that he never dissected any thing else : for not to mention the many other reasons that might be offered to the contrary, the very descriptions he gives of several muscles suit only to the human body, and differ from all the quadrupedes ; but because that ever renowned author has left us on record an account of the muscles in an ape, as well as in a man, I desire the reader to remark, That the descriptions of the muscles in his *Administrationes Anatomicæ*, and in his book, *De Dissectione Musculorum*, are chiefly taken from apes : but the account we have of them in his admirable book *De Ufu Partium*, are all taken from men. 'Tis pity the great Vesalius did not consider this.*

The method I have here observed, is the same with that made use of at Surgeons-hall, in this city, the most noted and most illustrious school of anatomy now in Europe. As so weighty an authority was more than sufficient to determine my choice, so I cannot but say, that it seems to be the best accommodated to the capacity

capacity of young students, and to be concerted in the most easy and distinct way.

I have purposely omitted the anatomical administration, or the manner of raising the muscles, upon the consideration, that it would have enlarged the bulk of this treatise, which is designed for a manual, fit to be carried about to publick dissections, and would have increased its price, without doing the young student any additional service; it being impossible to make any an operator in this way by oral precepts; manual operation, and the seeing one dissect, are the only effectual means for the compassing that end.

This comparative survey I design to continue thro' all the six parts, into which the human body is anatomically divided: the specimen now offered upon the muscles being what I had first drawn up, and withal a not improper fore-runner to the remaining parts.

It remains now to acquaint the reader, that all the muscles discovered or described by the immortal Galen, stand here without any name or mark affixed: those discovered since have the names of their respective discoverers joined to them: and those, which I humbly conceive, to have lain hitherto undiscovered, and have been brought to light by my assiduous application

cation to this part of anatomy, without any assistance from other men or books, have three stars set after their names. Though I have joined the discoverer's name to the title or denomination of the muscle, yet I take the liberty to give my own descriptions, without mentioning in what particular point it is that I depart from them. Indeed, where I find the descriptions agreeable to the life, or to what observation I have been able to make, I have kept to them, and particularly in a great many given by the justly celebrated Mr. Cowper, whose very words I have often used, it being impossible to find others with more justice to the subject. And to the same most accurate and indefatigable improver of anatomy am I obliged for the uses of most of the muscles, both human and canine. From the labour and industry of this worthy person, who is equally famous for his wonderful dexterity in dissecting, and great skill in designing, we are now daily expecting a compleat account and history of the human muscles, enriched with abundance of improvements and new discoveries, and illustrated with original figures, being all done from the life, by his own hand.

I have subjoined to this treatise an Etymological Table of the muscles, the frequent reading, and attentive consideration of which, will render easy and familiar

familiar the harsh and not easily remembered names of many of these instruments of motion.

I have industriously avoided the common fault of multiplying muscles without necessity. For example : I have described the Extensors of the cubit as one muscle ; the Gastrocnæmius and Solæus I make but one muscle, arising by four heads ; the oblique and transverse muscles of the Abdomen, in my opinion, make only three muscles, and not so many pairs. Indeed I make four muscles of the Triceps Femoris, because it has so many distinct beginnings and endings, as may be seen in the history of the muscles itself, to which I hasten.

THE

T H E

INTRODUCTION.

BEFORE I descend to the description of each muscle in particular, I think it requisite, for the benefit of young beginners, to give a short account of their structure and composition in general; and, by way of introduction to that, to premise what is meant by a Fibre and a Membrane; the whole being only an abridgment of what is found in authors, who treat of that subject at large.

A Fibre is called in Greek *ῥίζα*, in Latin *Fibra*, which properly signifies those Villi or strings that hang about the roots of plants; but in an anatomical sense, it may be described a substance, in figure like a fine thread, of a tensible and irritable nature; by the various texture and combination of which, all the solid parts of the human body are framed.

Of these fibres there are divers kinds, for some are membranous, some carnous, some cartilaginous, some osseous, and some nervous; but these three last mentioned belong to another place, whither I refer them. The carnous fibres are vascular and hollow, being full of little cells; they are called *Fibræ motrices*, inasmuch as they are the chief organs of muscular motion. But of these, and the other membranous and tendinous fibres, more hereafter.

The difference of these fibres may be likewise taken from their situation or course, with reference to which they are called straight, as running lengthways, or in right lines; circular, as running round some part, those for instance, of the Sphincter muscles; transverse, which intersect the straight ones at different angles; or oblique, which cut both the straight and transverse at unequal angles.

A Membrane is a broad, thin, white, dilatable substance, interwoven with several sorts of fibres, like a web.

It is called in Greek ὑμὴν, χιτὼν, and μενίγξ, all which appellations, in the works of Hippocrates and Galen, denote one and the same thing, being by them indifferently used: but
later

later writers have appropriated them to particular membranes ; thus Hymen is only given to that circular fold of the inner coat of the Vagina Uteri, placed near its outer orifice ; Menynx is only attributed to the membranes that involve the brain ; $\chi\lambda\omega\nu$ still denotes a membrane or coat. Now in English, a membrane, taken in a large sense, comprehends all the Tegumenta or coverings that invest the solid, or contain the fluid parts ; and these too have their particular names, according to the different parts they envelope. Thus the membrane that covers the Cranium, or skull, is called Pericranium ; that which lines the inside of the Thorax, Pleura ; that which invests the Abdomen, Peritonæum ; the membrane which firmly adheres to the surface of all the bones, Periostium. Besides, that the membranes of some particular parts have also particular names, as we may see in their history. The membranes which form the coat of membranous bodies, such as the stomach, guts, &c. or the membranes of the vessels, containing the humours, are properly stiled coats and vessels.

All the membranous fibres have a sort of elasticity or spring, whereby, upon occasion, they can very easily extend, and contract them-

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selves again, as may be observed in the Peritonæum, stomach and Uterus. The nervous filaments interlaced between them, and pouring in the animal spirits, make them extremely sensible whence the ancients were led into a mistake in affirming, that the membranes were the true organs of feeling.

Every membrane, though it appears never so thin, yet is manifestly double, and between the duplicature the vessels run. And in the tiffure of their inner membrane there are placed abundance of small glands, which separate an humour for moistening them, and thereby hinder preternatural adhesions to the parts they touch, which always happens to any of the Viscera, affected with a Scirrus, or hard tumor, which, in such a case, adheres firmly to all the neighbouring parts.

The use of the membranes is to wrap up, and cover the parts, to strengthen them, to defend several of them from being hurt by the subjacent bones, to sustain the vessels that are ramified upon them, to keep the parts united; and it is worth our observation, that the admirable sympathy, or consent of the parts one with another, depends,

depends, in a great measure, upon their fibrous connexions.

All that soft part of the body, the vulgar call flesh, is by anatomists distinguished into various parts or parcels, which they name so many muscles.

A Muscle is nothing but a Fasciculus, or bundle of fleshy and tendinous fibres, inclosed in a proper membrane, by means of which all the motions in an animal body are performed.

It is called *μῦς* by the Greeks, (which word properly signifies Mus, a mouse) and that perhaps from the likeness some of them have to that animal when stript of its skin; but others, with more reason, derive it from *μυεῖν*, contrahere, which is the proper action of a muscle.

The whole body of the muscle is commonly distinguished into three parts, viz. the head or beginning, the body or belly, and the tail or ending; or into the middle, and the two extremities.

The head is that part of the muscle which arises from the most stable part, unto which the contraction is made; for it is a constant rule, that every muscle is moved towards its beginning,

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ning, which thence may be called the centre of its motion.

The origin of a muscle is, for the most part, tendineo-carnous ; sometimes it is entirely tendinous, and sometimes it is observed to be only fleshy.

The tail, or end of a muscle, is that part of it which is implanted or inserted into the member which is to be moved. This extremity is commonly called its tendon, or Tendo in Latin, yet Fallopius gives it often the name of Chorda ; the Greeks call it ἀπὸ νεύρωσις ; but at present, by this word is only meant a thin, tendinous expansion, or membrane-like dilatation, sent off from the tendon of a muscle, as that of the Biceps Cubiti, Semi-tendinosus Tibiæ, &c.

The substance of a tendon is the very same with that of the rest of the muscle ; only its fibres being closely compacted together, for the conveniency perhaps of having a greater number of them inserted into a narrow place, they feel harder, and appear of a whiter colour ; so that the fleshy fibres of a muscle are only its tendon divided and loose ; and the tendon is nothing but those very fibres closely united, as Spigelius has most elegantly expressed it.

It

It is very probable, that every single muscle either begins or ends tendinous, (with this difference, that some few of them end in the Periostium, though the greatest part do penetrate that membrane, and are immediately inserted into the bone) the stronger and more conspicuous being extended beyond the fleshy part; the slender, and not so discernible, lie either hid under the flesh, or they are interlaced between its fibres.

It is necessary to know, that the head and tail of a muscle are terms convertible; for according to the different situation of the body, those extremities do so alter, that the part which was before immoveable and fixed, becomes moveable.

The belly of a muscle is the middle part of it, which consists of fleshy fibres, red, lax, and spongy, as may be distinctly observed in a piece of parboiled flesh. Now each fibre is made up of a vast number of little Fibrillæ, which are so many very slender hollow pipes, bound about by small transverse parallel threads, which divide these hollow fibrils into a great many Vesiculæ, or cells, that have no communication one with another, but only afford a place of entertain-
ment

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ment for the blood and spirits in the action of the muscle. This red colour of the fleshy fibres is only owing to the blood they receive; for upon injecting warm water plentifully into the arteries, the redness abates, and the fibres put on the same colour with these distractile tubes.

The proper constituent parts of a muscle are those already described.

The common are arteries, veins, nerves, lymphæducts and fat. The arteries import the blood, and the veins convey it back again to the heart; the nerves bring animal spirits upon any impression communicated to them from the mind; the Lymphæducts, perhaps, carry back the remains of the nourishing juice, to be re-funded into the venal mass; the fat that is lodged upon and between the fibres, serves to lubricate and render them more fit for action.

A muscle is either single or compound. In the first all the fleshy fibres run parallel to one another, or in the same direction; in the latter they run in several planes crossing one another, or in different courses.

All muscles, which serve for the same motion, are called Congerentes, because they assist
one

one another in their action; and those, which are the instruments of opposite motions, are named Antagonistæ; as for example: every Flexor, or bending muscle, has a Tensor, or extending muscle; and it is a constant observation, that when one of these muscles is shortened, the other is extended; for the shortening of the muscle which acts, must needs produce an extension of its antagonist, or of that which acteth not.

The use or action of the muscles is to perform all the different motions of the parts, and that is done by contracting themselves; for when the Fibrillæ Motrices are shortened, the moveable part must of necessity be drawn towards the fixed; or the part from which the muscle does spring, and that into which it is inserted, must needs be brought nearer each other. But after what particular manner this is transacted, I shall not at present enquire, but refer my inquisitive reader, who delights in such speculations, to the authors who handle that subject, where their various conjectures may be seen at large; which, in truth, I am little fond of transcribing. The account of muscular motion, given by the great Bernouillius, late physician
at

at Bafil, seems to be the most natural, and the most agreeable to the rules of mechanisim, of any that has been hitherto advanced ; and to repair the loss that we lie under, of not meeting readily with that incomparable treatise, the world will speedily see a correct edition of it, with large improvements from Dr. Mead, whose distinguishing capacity in the way of physick and learning, is accompanied with a candor and goodness that affects all who know him.

The differences of the muscles, being mostly taken from the very same things whence their names are derived, to avoid all needless repetitions, I shall refer to the Etymological Table, and proceed.

THE

T H E C O N T E N T S.

O <i>F the muscles of the</i>	<i>Of the muscles of the</i>
<i>Abdomen, chap. 1</i>	<i>head, appearing in the</i>
— <i>Testis, 2</i>	<i>fore and lateral parts</i>
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— <i>Cheeks, 9</i>	<i>pear on the fore part</i>
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— <i>Internal ear and</i>	— <i>Bladder of urine, 22</i>
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— <i>Larynx, 14</i>	<i>Thorax that appear,</i>
— <i>Pharynx, 15</i>	<i>the body lying prone, 25</i>
— <i>Uvula, 16</i>	<i>Of the muscles of the</i>
— <i>Tuba Eustachiana, 17</i>	<i>head that appear in</i>
	<i>the</i>

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An Alphabetical Table of the Parts with the Names and Number of Muscles belonging to each.

Musculi Abdominis, V.

*O*blivus *ascendens.*
—— *descendens.*

Pyramidalis.

Rectus.

Transversalis.

Musculi Ani, III.

Levator major, seu inter-
nus.

Levator minor, seu exter-
nus.

Sphincter.

Musculi Auriculæ, II.

Communes.

Proprii.

Musculi Auris inter-
næ, IV.

Externus Auris.

Internus Auris.

Musculus Stapedis.

Obliquus.

Musculi Capitis, XII.

Caput concutiens.

Complexus.

Obliquus inferior.

—— *superior.*

Rectus internus major.

—— ——— *minor.*

—— *lateralis.*

—— *major.*

—— *minor.*

Splenius.

Sterno-mastoidæus.

Trachelo-mastoidæus.

Musculi Carpi, IV.

Extensor Carpi Radialis.

—— ——— *Ulnaris.*

Flexor Carpi Radialis.

—— ——— *Ulnaris.*

Musculus Coccygis, I.

Coccygæus.

Musculi Colli, VI.

Inter-spinales.

Inter-transversales.

Inter-vertebrales.

Longus.

Spinalis.

Transversalis.

xxvi *An Alphabetical Table of the parts,*

Musculi Cubiti, V.

Anconæus.

Biceps externus.

—— *internus.*

Brachialis externus.

—— *internus.*

Musculi quatuor Digitorum Manûs, IV.

Extensor Digitorum communis.

Flexor profundus.

Interossei.

Lumbricales.

Musculi quatuor Digitorum Pedis, VI.

Extensor brevis.

—— *longus.*

Flexor profundus.

—— *sublimis.*

Interossei.

Lumbricales.

N. B. Musculi Pollicis, Indicis & minimi Digiti, vid. Ord. Alphabet.

Musculi Dorfi, III.

Longissimus.

Semi-spinalis.

Transversales.

Musculi Femoris, XII.

Abductores.

Gemini.

Glutæus major.

—— *medius.*

—— *minor.*

Iliacus externus.

—— *internus.*

Obturator externus.

—— *internus.*

Pectinalis.

Psoas magnus.

Quadratus.

Musculi Cutis Frontis & Occipitis, II.

Musculus Frontalis verus, seu Corrugator Coiteri.

Occipito-frontalis.

Musculi Genæ, II.

Buccinator.

Quadratus.

Musculi Humeri, IX.

Coraco-brachialis.

Deltoides.

Infra-spinatus.

Latissimus Dorfi.

Pectoralis.

Sub-scapularis.

Supra-spinatus.

Tere.

Teres major.

—— *minor.*

Musculi Ossis Hyoidis,
VI.

Coraco-hyoidæus.

Genio-hyoidæus.

Mylo-hyoidæus.

Sterno-hyoidæus.

Stylo-chondro-hyoidæus.

Stylo-hyoidæus.

Musculi Indicis, III.

Abductor Indicis.

Extensor secundi Internodii Indicis proprius.

Extensor tertii Internodii Indicis.

Musculi Labiorum,
VIII.

Depressor Labii inferioris proprius.

Depressor Labii superioris proprius.

Depressor Labiorum communis.

Elevator Labii inferioris proprius.

Elevator Labii superioris proprius.

Elevator Labiorum communis.

Sphincter Labiorum.

Zygomaticus.

Musculus Laryngis,
VIII.

Arytenoidæus major.

—— *minor.*

Crico-arytenoidæus lateralis.

Crico arytenoidæus posticus.

Crico thyreoidæus.

Hyo thyreoidæus.

Sterno-thyreoidæus.

Thyreoid-arytenoidæus.

Musculi Linguae, IV.

Cerato-glossus.

Genio-glossus.

Lingualis.

Stylo-glossus.

Musculi Lumborum, V.

Inter-transversales.

Psoas parvus.

Quadratus.

Spinalis.

Transversalis, seu sacer.

Musculi Mallei,

Vid. Musculi Aur. intern.

Musculi Maxillae inferioris, V.

Digastricus.

Masseter.

xxviii *An Alphabetical Table of the parts,*

Masseter.

Pterigoidæus externus.

———— *internus.*

Temporalis.

Musculus meatus Auditorii, I.

Musculus meatus Auditorii novus.

Musculi minimi Digiti Manûs, III.

Abductor minimi Digiti.

Extensor tertii Internodii minimi Digiti.

Flexor primi Internodii minimi Digiti.

Musculi minimi Digiti Pedis, II.

Abductor.

Flexor primi Internodii minimi Digiti.

Musculus Nasi, I.

Rinæus vel Nasalis.

Musculi cutis Occipitis,

Vid. Musc. cutis Frontis,

Musculi Oculi, VI.

Abductor.

Adductor.

Depressor.

Elevator.

Obliquus inferior.

Obliquus superior.

Musculi Palmæ Manûs,

II.

Palmaris brevis.

———— *longus.*

Musculi Palpebræ, II.

Aperiens Palpebram rectus.

Orbicularis Palpebrarum.

Musculi Penis, II.

Accelerator Urinæ.

Erector Penis.

Musculi Pharyngis, XII.

Pharyngæus, whose various orders of fibres are named as follows:

Cephalo-pharyngæus.

Chondro-pharyngæus.

Crico-pharyngæus.

Glossopharyngæus.

Hyo-pharyngæus.

Mylo-pharyngæus.

Pterigo-pharyngæus.

Salpingo-pharyngæus.

Stylo-pharyngæus.

Syndesmo-pharyngæus.

Thyreopharyngæus.

Musculi Pollicis Manûs, IX.

Abductor.

Adductor.

<i>Adductor ad Indicem</i>	<i>vulgò Gastrocnemius,</i>
——— <i>minimum</i>	<i>& Solæus.</i>
<i>digitum.</i>	<i>Extensor Tarsi minor,</i>
<i>Extensor primi Internodii.</i>	<i>vulgò Plantaris.</i>
——— <i>secundi.</i>	<i>Peronæus primus.</i>
——— <i>tertii.</i>	——— <i>secundus.</i>
<i>Flexor primi Internodii.</i>	<i>Tibialis anticus.</i>
——— <i>secundi.</i>	——— <i>posticus.</i>
——— <i>tertii.</i>	<i>Musculi Testium, II.</i>
<i>Musculi Pollicis Pedis,</i>	<i>Cremaster.</i>
<i>VI.</i>	<i>Dartos.</i>
<i>Abductor.</i>	<i>Musculi Thoracis,</i>
<i>Adductor.</i>	<i>XIII.</i>
<i>Extensor brevis.</i>	<i>Cervicalis ascendens.</i>
——— <i>longus.</i>	<i>Costarum depressores.</i>
<i>Flexor brevis.</i>	——— <i>levatores.</i>
——— <i>longus.</i>	<i>Diaphragma.</i>
<i>Musculi Radii, IV.</i>	<i>Intercostales.</i>
<i>Pronator quadratus.</i>	<i>Sacro-lumbalis.</i>
——— <i>teres.</i>	<i>Scalenus.</i>
<i>Supinator brevis.</i>	<i>Serratus inferior posticus.</i>
——— <i>longus.</i>	<i>Serratus major anticus.</i>
<i>Musculus Stapedis,</i>	——— <i>minor anticus.</i>
<i>Vid. Musc. Aur. intern.</i>	——— <i>superior posticus.</i>
<i>Musculi Scapulæ, III.</i>	<i>Subclavius.</i>
<i>Levator Scapulæ.</i>	<i>Triangularis.</i>
<i>Rhomboides.</i>	<i>Musculi Tibiæ, XI.</i>
<i>Trapezius.</i>	<i>Biceps.</i>
<i>Musculi Tarsi, VI.</i>	<i>Cruræus.</i>
<i>Extensor Tarsi Suralis,</i>	<i>Gracilis.</i>

<i>Membranofus.</i>	vel <i>Palato-salpin-</i>
<i>Poplitæus.</i>	<i>gæus.</i>
<i>Rectus.</i>	<i>Musculi Veficæ, II.</i>
<i>Sartorius.</i>	<i>Detrufor Urinæ.</i>
<i>Semi-membranofus.</i>	<i>Sphincter Veficæ.</i>
<i>Semi-nervofus.</i>	<i>Musculi Uvulæ, IV.</i>
<i>Vastus externus.</i>	<i>Gloffo-staphilinus.</i>
—— <i>internus.</i>	<i>Palato staphilinus.</i>
<i>Musculus Tubæ Eu-</i>	<i>Salpingo-staphilinus.</i>
<i>Mu ftachianæ.</i>	<i>Thyreo-staphilinus.</i>
<i>fculus Tubæ novus,</i>	

AN EXPLICATION of the
 ABBREVIATED NAMES of the
 AUTHORS quoted in this
 Treatise, with the Title of their
 Works to which these Quotations
 refer, and the Names of the
 MUSCLES each of them have
 discovered.

AQUAPENDENT.
Hieronimus Fabri-
tius ab Aquapendente,
in his Tréatise de Au-
ditu, Patavii, 1600,
describes the Musculus
externus Auris.

COITER. *Volcherus Coi-*
ter, in his externarum
& internarum princi-
paliū humanis Cor-
poris Partium, Tabulæ
atque anatomicæ Ex-
ercitationes Observati-
onesque variæ, Norim-

bergæ, 1573, describes
the Corrugator.

COWP. *Wm. Cowper,*
in his Myctomia refor-
mata, or a new Admi-
nistration of all the
Muscles of human Bo-
dies, London, 1694,
describes the
Elevator Labii inferi-
oris proprius,
Depressor Labii supe-
rioris proprius,
Pterigo-pharyngæus,
Rectus internus minor,
Inter-

*Interspinales,
Spinalis Lumborum,
Extensor Pollicis Pedis
brevis,
Flexor primi Internodii
minimi Digiti.*

*His Discovery of the
Costarum Depressores
he was so kind as to
communicate unto me.*

DIEMERBR. *Isbrandus
de Diemberbroeck, in his
Anatome Corporis hu-
mani. Ultrajecti, 1672.
describes the
Cervicalis descendens.*

DUVERN. *Josephus du
Verny, in his Tractatus
de Organo Auditûs,
continens Structuram,
Usum, & Morbos om-
nium Auris Partium.
Norimbergæ, 1684,
describes the
Musculus Auris exter-
nus,
Musculus Stapedis.*

EUSTACH. *Bartholo-
mæus Eustachius, in his
Treatise de Auditûs
Organis, printed with
his Opuscula anatomi-
ca Venetiis, 1563, de-
scribes the
Musculus Auris inter-
nus.*

FALLOP. *Gabriel Fallo-
pius, in his Observa-
tiones anatomicae, Ve-
netiis, 1562, describes
the
Pyramidalis Abdomi-
nis,
Aperiens Palpebram
rectus,
Mylo-hyoidæus,
Rectus lateralis,
Pterigoidæus externus,
Capitis par tertium,
Erector Clitoridis.*

GALEN. *Claudius Gale-
nus describes all the
Muscles mentioned in
this Specimen, that
have neither a Name
nor*

nor a Mark affixed to them, in his incomparable Treatises, de Dissectione Musculorum ad Tyrones, de anatomicis Administrationibus, and de Usu Partium Corporis humani.

Auditusque Organis Historia anatomica. Ferrariae 1600, describes the Externus Auris, and in his Tabulae anatomicae, published by Daniel Bucretius, he describes the Transversalis Pedis.

J. A. SYLV. Jacobus Sylvius, in his Opera medica, Coloniae Allobrogum, 1630, describes the Massa carnea, seu Musculosæ Carnis Portio.

RIOL. Johannes Riolanus, in his Anthropographia, Parisiis 1649, describes the Levator Ani externus, Psoas parvus, Anconæus, Hypothenar, Thenar.

J. BAPT. CANAN. Johannes Baptista Cananus, in his Musculorum humani Corporis picturata Dissectio Ferrariae, 1572, describes the Palmaris brevis.

SPIG. Adrianus Spigelius, in his Fabrica Corporis humani ex Recensione Joh. Antonid. vander Linden, Amstelodami 1645, describes the Lingualis.

JUL. CASS. PLAC. Julius Casserius Placentinus, in his de Vocis

STEN. Nicolaus Steno, in his de Musculis & Glandulis

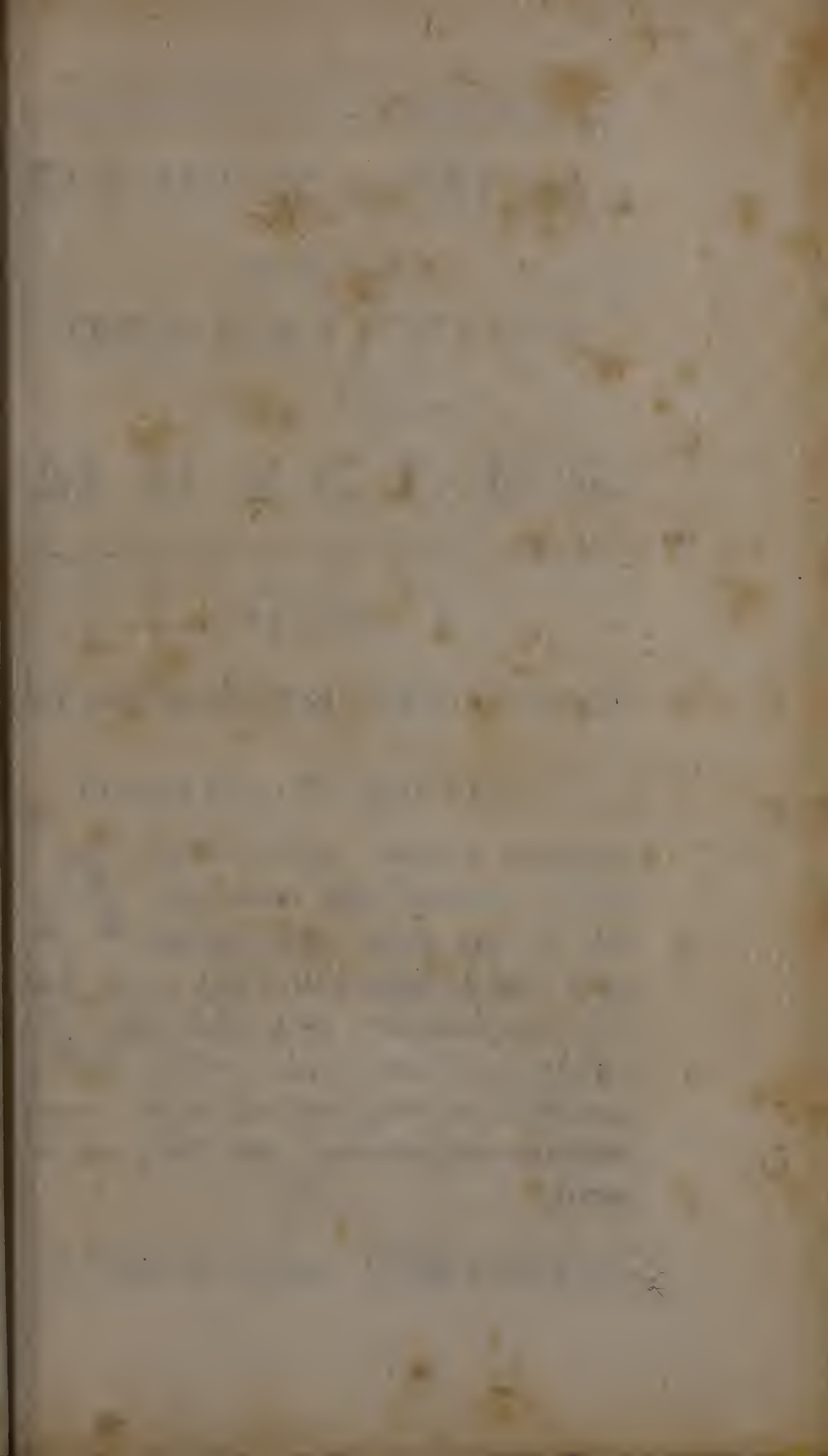
Glandulis Observationum Specimen, Hafniæ, 1667, describes the Costarum Levatores, Musculi ad Sacrolumbum accessorii.

VALSALV. *Antonius Maria Valsalva, in his late Treatise de Aure humana, Bononiæ 1704, describes the Crico-pharyngæus, Glosso-pharyngæus, Hyo-pharyngæus, Thyreo-pharyngæus, Glosso-staphilinus, Salpingo-staphilinus, Musculus Tubæ novus.*

VESAL. *Andreas Vesalius in his humani Corporis Fabrica, Basilicæ 1543, describes the Par nonum Pedis.*

*The following Muscles, which have this Mark * * * affixed to their Names, were discovered by the Author in his late Application to Myotomy.*

*Musculus meatus Auditorii,
Stylo-chondro-hyoidæus,
Chondro-pharyngæus,
Mylo-pharyngæus,
Salpingo-pharyngæus,
Syndesmo-pharyngæus,
Palato-staphilinus,
Thyreo-staphilinus,
Inter-transversales Colli,
Inter-vertebrales Colli,
Inter-transversales Lumborum,
Coccygæus,
Duo Musculi Vaginæ Uteri.*



MYOGRAPHIA:

OR, A

DESCRIPTION

OF THE

MUSCLES.

CHAP. I.

Of the muscles of the ABDOMEN.

OBLIQUUS DESCENDENS *

ARISES by several tendons, that next the Vertebræ Dorsæ being longer than any of the rest, from the lower edge of the 5th, 6th, 7th, 8th, 9th, 10th and 11th rib, a little before they become cartilaginous; from the cartilaginous extremity of the 12th rib; and tendineo-carnous
B from

* Obliquus externus. Winslow and Albin.

The muscles of the Abdomen.

from all the outside of the same ribs near their cartilages. Its four uppermost acute beginnings are intermixed with the terminating Digituli of the Serratus Anticus major upon the body of the rib, and all the rest adhere to the Latissimus Dorsi, at its origin from the ribs.

Insertion. Is inserted fleshy into the outer lip of more than one half of the Os Ilium, tendinous into the fore part of the same bone, and into the Peritonæum, and by two tendons into the Os Pubis; and besides into all the Linea alba, and lower part of the Os Pectoris, by a broad membranous tendon.

Use. Its use is to compress all the Viscera contained in the Abdomen, to pull the ribs down in expiration, and to turn the trunk of the body to one side.

N. B. Before you can raise this muscle, you must free part of the Latissimus Dorsi from its adhesion to the Os Ilium, and then you will have a view of the Obliquus internus, the Triangularis Lumborum, the tendon of the Trans-

The muscles of the Abdomen.

3

Transversalis Abdominis and the Sacrolumbalis.

In a dog it arises from the ten inferior ribs, and membranous from the top of the spines of the four upper Vertebrae of the loins.

OBLIQUUS ASCENDENS *

ARISES tendinous from the posterior part of the spine of the Os Ilium, fleshy from the rest of the circular edge of that bone, tendinous again from the Peritonæum, and from the middle and fore part of the Os Pubis. Origin.

Is inserted fleshy into the lower edge of the last rib, and extremities of the two next above it, and tendinous into the cartilages of all the rest below the Sternum, and into the whole length of the Linea alba. Insertion.

Its use is much the same with the former, the action of both being much strengthened by the decussation and different course of their carnos fibres. Use.

B 2

In

* Obliquus internus. Winslow and Albin.

N. B. Obliquus ascendens runs in fleshy between the three last ribs, where their cartilaginous endings do not adhere to one another.

The muscles of the Abdomen.

In a dog it arises also from the spinal processes of the loins, by a thin tendinous membrane, like the former.

N. B. If you will take the trouble to separate the two tendons of these oblique muscles, you will observe that that of the Internus is almost quite lost in the tendon of the Externus, before it reaches what they call the Linea alba: but before you can effect this, you must cut thro' a tendinous membrane that comes from the tendon of the Transversalis at the semilunary line, and joins in with that of the Ascendens.

PYRAMIDALIS FALLOP. *

Origin. ARISES fleshy from the middle of the fore part of the Os Pubis.

Insertion. Is inserted by a long tendon at the union of the Musculi transversales, between the Recti, a little below the navel.

Use. Its use is to promote the discharge of urine, by pulling the lower belly downwards,

* N. B. This muscle is often wanting in one side, or both.

The muscles of the Abdomen.

5

wards, and compressing the bladder, according to its first discoverer.

In a dog it is wanting.

RECTUS *

ARISES from the upper and anterior part of the Os Pubis by a thick and short tendon, and from the same bone near the origin of the Corpus Penis cavernosum by a long and small one. It soon becomes fleshy. Origin.

Is inserted tendineo-carnous into the cartilaginous extremities of the seventh, sixth and fifth rib, near the Os Pectoris. Insertion.

It is much broader at its insertion than in any other part, where it receives some fleshy fibres from the lowermost origination of the pectoral muscle.

Its use is to compress the fore part of the lower belly, and according to the different positions of the body, to bring the breast nearer the Pubis, and so bend the trunk forwards, or *è contrà*, as in raising our bodies from a decumbent posture. Use.

B 3

In

* Le Droit. Winslow.

The muscles of the Abdomen.

In a dog it is inserted fleshy into the lower part of the Sternum, and tendinous into all the rest of that bone.

N. B. The tendons of the oblique muscles cannot be easily separated from the intersections of the Rectus, the lowermost of which lies parallel with the navel, but all the rest are above it.

TRANSVERSALIS

Origin.

ARISES by a broad and thin tendon from the transverse processes of the Vertebrae Lumborum, fleshy from the inner edge of the spine of the Ilium, and from the cartilaginous endings of all the ribs below the Sternum.

Its fleshy fibres above the fore part of the Os Ilium run disgregated, and firmly adhere to the muscle above them

Insertion.

Is inserted tendinous and fleshy into the Cartilago ensiformis, tendinous into all the Linea alba and Peritonæum, being firmly annexed to a little protuberance in the Os Pubis, on the outside of the Musculus Abdominis Rectus.

Its

The muscles of the Abdomen.

7

Its use is to compress the sides of the Abdomen, and to assist in expiration.

N. B. 1. By the Peritonæum, in my description of the Abdominal muscles, I understand what authors call Ligamentum Pubis; it being nothing but the firm union of the tendons of the oblique and transverse muscles with the Peritonæum, between the anterior part of the spine of the Ilium and the Os Pubis, whereby a protrusion, or falling down of the intestines, &c. in that place, which has nothing else to secure it, is effectually prevented.

2. These three last named muscles ought not to be reckoned as so many pairs, but only as so many single digastric muscles, with a broad middle tendon, and two fleshy bellies.

This was the prevailing opinion in Columbus's time. Vid. Reald. Columb. de re anat. lib. v. cap. xxii. de musculis.

3. The Linea alba is nothing but part of the tendons of these oblique and transverse muscles appearing in the interstice

The muscles of the Abdomen.

terflice of the Recti, between the cartilago Ziphoides and the Os Pubis, and adhering firmly to one another in this place ; which strict union occasions the whiteness to be more conspicuous here than in any other part. So that it was only in compliance with custom, that I said their tendons were inserted into this white line.

4. They are all three perforated a little above the Os Pectinis to one side, the two oblique in their tendinous, and the transverse in its fleshy part, for the passage of the Processus Peritonæi, receiving the Vas deferens and the spermatic vein and artery, inclosed in a large membrane distinct from the elongation of the Peritonæum. But besides these, I always observe a nerve and an artery pass that way from the Abdomen to the Scrotum, Inguen, and upper part of the Femur ; from whence some venal twigs are remitted through the same holes into that cavity. The Cremaster muscle does only pierce the two oblique muscles. The surprising and most useful

The muscles of the Testes.

9

ful contrivance of the perforations or rings of these muscles shall be enquired into on another occasion.

C H A P. III.

Of the muscles of the TESTES.

EACH Testicle has one proper muscle, and one common to both, called

DARTOS, *

Which is a thin muscular membrane, including both the Testes.

Its use is to contract and wrinkle the Scrotum by the action of its fleshy fibres.

The muscle proper to each is the

CREMASTER,

Which arises from the lowest and fore part of the spine of the Ilium, and from the

Origin.

* *Monro, Albinus, and Haller, have left out the Dartos from among the number of the muscles, as it is nothing but the cellular membranes of the Scrotum collapsed. Vid. Med. Essays, vol. v. art. xix.*

The muscles of the Penis.

the conjunction of the Os Pubis, with this bone by two distinct beginnings.

Insertion. Is inserted into the Tunica vaginalis, upon which it is spread in several distinct portions.

Use. Its use is to draw up and suspend the Testis.

C H A P. II.

Of the muscles of the PENIS.

TH E Penis has two pair of muscles, the first is very distinct, the last is inseparately united in its origin and progress. The Transversalis Penis, mentioned by Aquapendens, is only part of the Musculus accelerator Urinæ, arising from the knob of the Ischium; for it is not inserted into the Cavum ovale, or bulb of the Urethra, but joins in with this muscle, of which it makes a second beginning.

Some describe and delineate for the Transversalis Penis the Levator Ani externus Rioli.

ERECTOR

ERECTOR PENIS *

ARISES tendinous and fleshy from between the tubercle of the Ischium, and the beginning of the Corpus cavernosum, and embracing the whole Crus, Origin.

Is inserted into the external thick membrane of the two cavernous bodies of the Penis, near the union. Insertion.

Its use is to pull the Penis towards the Os Pubis, whereby its great vein is compressed, and the reflux blood denied its passage under those bones, by which means that member is erected. Vid. the appendix to Mr. Cowper's excellent treatise of Myotom. reformat. Use.

ACCELERATOR URINÆ †

ARISES fleshy from the Sphincter Ani, and superior part of the Urethra, and tendinous from the Ischium. Origin.

Is inserted into the Corpus cavernosum, from near their beginning to a little below their union. Insertion.

Its

* L'Ichio-caverneux. Winslow.

† Le Bulbo-caverneux: Winsl.

The muscles of the Penis.

Use.

Its use is to compress most adequately the bulbous or largest part of the Urethra, and drive the blood towards the glans for its distention.

A dog has yet another muscle besides these two, which may be called Transversalis; it is a true digastric muscle, having two fleshy bellies arising from a little round protuberance in the inferior part of the Os Pubis, on each side, uniting in a middle tendon between the Os Pubis and the Penis. From the particular structure of this muscle, with a cartilaginous body placed transversely under the Offa Pubis, and the great vein of the Penis, running between the muscle and it, I could easily account for the Erectio Penis in this animal, who copulates backwards. But that being foreign to the subject in hand, I will reserve it for a fitter occasion.

C H A P. IV.

Of the muscles of the skin of the
Os OCCIPITIS and Os FRONTALIS.

THE skin of the head is moved by one pair of muscles, and one single digastric muscle.

MUSCULUS FRONTALIS VERUS, seu
CORRUGATOR Coiteri, *

ARISES fleshy from the process of Origin.
the Os Frontis, next the inner or great
angle of the orbit, above the joining of
the Os Nasi and superior process of the
Os maxillare with this bone, from thence
it runs obliquely, outwards and upwards,
and

Is inserted into the fleshy part of the Insertion.
subsequent muscle, some of its Fibrillæ
passing through into the skin a little
higher than the middle region of the
eye-brows.

C

Its

* Corrugator Supercilii. Albin.
Le Muscle fourcilier. Winsl.

The muscles of the skin of the

Use.

Its use is to smooth the skin of the forehead, by pulling it down after the action of the Occipito frontalis; and when it acts more forcibly, it serves to wrinkle the skin of the front, between the Supercilia, as it happens when we frown or knit the brows.

This is wanting in a dog.

OCCIPITO-FRONTALIS *

Origin.

ARISES fleshy from the transverse line of the Occiput, opposite to part of the superior termination of the Mastoidæus, and part of the beginning of the Trapezius next it, and then tendinous from the rest of that line backwards, arising after the same manner on the other side; from thence it goes straight up, and soon becoming all tendinous, it covers the two parietal bones, and the Os squamosa, above the temporal muscles, its outer edge being fastened to the Os jugale on each side. This broad tendon near the coronal suture grows

* Epicranius. Albin.

grows fleshy, and descends with straight fibres as low as the Musculi Orbiculares.

Is inserted into the skin at the eye-brows, having sent down between them a narrow fleshy slip or elongation, which is continued over the *Ossa Nasi* as far as its cartilaginous part, where its fibres run off on each side, and terminate in the skin above the *Musculus Nasi proprius*. Insertion.

When this digastric muscle, which Use. covers all the upper part of the skull like a cap, acts, it pulls the skin of the head backwards, and at the same time it draws up and wrinkles that of the forehead, being antagonized by the *Corrugator*.

This muscle in a dog is only part of the Membrana carnea, that covers all the skull between the skin and the muscles.

Columbus was of the opinion that the *Musculus occipitalis*, which he first described, and named *Musculus supercilium trahens*, joined the *Frontalis* by its broad tendon, and so drew the skin of the fore-head and hind-head backwards. *Vide cap. vii. de Musculis.*

C H A P. V.

Of the muscles of the EYE-LIDS.

THE Palpebræ have two pair of muscles; one is proper to the upper lid, the other is common to both.

APERIENS PALPEBRAM RECTUS,
Fallop. *

Origin. ARISES from the upper part of the hole of the sphenoidal bone, through which the optic nerve passes, between the Attollens and the Obliquus major.

Insertion. Is inserted by a broad tendon into the cartilaginous border of the upper eyelid.

Use. Its use is to open the eye, by drawing the eye-lid up.

ORBICULARIS PALPEBRARUM †

Origin. ARISES tendinous and fleshy from the edge of the Os maxillare, that makes the

* Levator Palpebræ superioris. Albin.

Apertor Oculi. Spigel.

Pyramidalis. Molinett.

† Sphincter. Molinett.

the lower part of the orbit, at the inner angle of the eye. Its fibres are spread upon the under lid, and a great part of the Os Mali, and, surrounding the outer and little Canthus, they are continued over the upper part of the orbit, at the great angle, firmly adhering to part of the Os Frontis, and superior process of the Os maxillare.

Its use is to shut the eye, by bringing down the upper lid, and pulling up the lower. Use.

N. B. The Ciliaris Riolani is only part of this muscle next the Cilia or Tarfi.

I have often taken notice of a little fleshy slip, which parted from the Orbicularis Palpebrarum, and run down with the Zygomaticus.

In a dog it arises tendinous from the upper part of the Os jugale, at the external Canthus of the eye; it divides and surrounds each eye-lid with its fleshy Fibrillæ, which acting must necessarily pull up both eye-lids, bring them nearer one another, and shut them.

C H A P. VI.

Of the muscles of the EYES.

EACH eye has six muscles.

OBLIQUUS SUPERIOR *

Origin. ARISES from the edge of the hole that transmits the optic nerve tendinous, between the Elevator and Adductor, from thence it runs straight along the Os planum to the upper part of the orbit, at the great Canthus where the Trochlea is affixed to the Os Frontis, through which it passes, and turning backwards,

Insertion. Is inserted tendinous into the Tunica Sclerotis behind the insertion of the Attollens.

Use. Its use is to draw the globe of the eye forwards, and to turn its pupil downwards.

OBLIQUUS

* Trochlearis. Casser. Obliquus major. Molinett.

OBLIQUUS INFERIOR *

ARISES tendinous from the Os maxillare, where it makes the edge of the orbit near its juncture with the Os Mali, and running obliquely outwards, Origin.

Is inserted into the Sclerotis, between the insertion of the Abductor and the optic nerve. Insertion.

Its use is to draw the bulb of the eye forwards, and turn its pupil upwards. The uses I have assigned to these two muscles were first advanced by the ingenious and most accurate anatomist, Mr. Cowper. Use.

ELEVATOR †

ARISES tendinous and fleshy from the edge of the Foramen lacerum near the Abductor. Origin.

Is inserted into the superior and forepart of the Tunica Sclerotis by a thin tendon. Insertion.

Its

* Obliquus minor. Molinett.

† Attollens, Superbus, rectus superior.

The muscles of the Eyes.

Use. Its use is to lift up the globe of the eye.

DEPRESSOR *

Origin. ARISES tendinous and fleshy from the lower edge of the hole that gives passage to the optic nerve,

Insertion. Is inserted by a thin tendon into the Sclerotic opposite to the insertion of the former.

Use. Its use is to pull the globe of the eye down.

ADDUCTOR †

Origin. ARISES tendinous and fleshy from the edge of the hole in the sphænoïdal bone, that transmits the optic nerve, between the Obliquus major and the Humilis.

Insertion. Is inserted by a thin tendon into the Tunica sclerotica, where it respects the great Canthus.

Use. Its use is to bring the eye toward the nose.

ABDUCTOR

* Deprimens, Humilis, rectus inferior.

† Bibitorius, rectus interior.

ABDUCTOR *

ARISES tendinous and fleshy from the Foramen lacerum, without the orbit. Origin.

Is inserted by a thin tendon into the Sclerotis, where it respects the little Canthus. Insertion.

Its use is to move the eye outwards, from the great to the little angle. Use,

Beside these six, a dog has two more, of which one belongs to the globe itself, the other to the Trochlea of the eye; the first is called Musculus septimus oculi suspensorius, it arises from the margin of the hole through which the optic nerve passeth into the eye, and is inserted, being divided into four or five fleshy portions, into the lower part of the Sclerotica, below the termination of the other muscles. Its use is to sustain and keep up the bulb of the eye, that it may not fall too low, and thereby put a stress on the nerve in this and other animals that go much with their heads down, or feed upon the ground.

The

* Indignatorius, Iracundus, rectus exterior.

The muscles of the Nose.

The other I call Musculus Trochleæ proprius, which is a very small muscle, arising fleshy near the origin of the Obliquus major, and soon turning into a slender tendon, is inserted into the Trochlea, to whose motions it is subservient. A description of this cartilaginous ring will be given at the end of my Comparative Osteology.

C H A P. VII.

Of the muscles of the Nose.

THE cartilaginous part of the nose has one pair of proper muscles, and three pair common to it with other parts.

RINÆUS, vel NASALIS, ***

- Origin. ARISES fleshy from the extremity of the Os nasi, and adjacent part of the Os maxillare.
- Insertion. Is inserted into all the cartilages of the Ala.
- Use. Its use is to open and dilate the nostril, by pulling that part outwards.

THE

The first of the common is an elongation of the Occipito frontalis already described, and serves to draw the skin of the nose upwards and backwards *.

The second is part of the Elevator Labii superioris proprius, arising from the upper part of the Os maxillare, where it joins the Os Frontis at the inner Canthus †.

The third is common to it with the upper lip, being part of the Depressor Labii superioris proprius.

For the motion of a dog's flat nose, which is continued to the very extremity of the Maxilla superior, there are no proper muscles.

C H A P. VIII.

Of the muscles of the LIPS.

THE muscles of the lips are either common or proper. The common are inserted into the angles of the mouth, where the two lips join, being
equally

* Les pyramidaux. Winsl.

† Levator Labii superioris aëque Nasi. Alb.

La grande portion de l'Incisif lateral.
Winsl.

equally useful to both; they are three pair in number, and one odd one.

ZYGOMATICUS *

Origin. ARISES fleshy from the Os Mali, near its conjunction with the long process of the Os squamosum.

Insertion. Is inserted near the angle of the lips.

Use. Its use is, with its partner, to draw both lips upwards.

ELEVATOR LABIORUM COMMUNIS †

Origin. ARISES thin and fleshy from the hollow of the Os Maxillare, under the hole called Orbiter externus.

Insertion. Is inserted into the angle of the mouth and under lip.

Use. Its use is to bring the two lips upwards.

DEPRESSOR LABIORUM COMMUNIS §

Origin. ARISES broad and fleshy from the lower edge of the Maxilla inferior, between

* Zygomaticus major. Albin. & Winsl.

† Levator anguli Oris. Albin. Le Canin. Winsl.

§ Depressor anguli Oris. Albin. Le Triangulaire. Winsl.

tween that part of the Latissimus Colli, which climbs over the Maxilla to the angle of the lips, and the Depressor Labii inferioris proprius.

Is inserted into the angle of the lips. Insertion.

Its use is to pull down the corners of the mouth. Use.

SPHINCTER LABIORUM *.

THE fleshy fibres of this muscle surround the lips like a ring. Origin.

Its use being to constrict and draw both lips together. Use.

The proper belong either to the upper or lower lip, and are four pair in number, two muscles on each side to each lip.

ELEVATOR LABII INFERIORIS PROPRIUS, Cowper. ‡

ARISES from the lower jaw, near the gums of the Dentes incisivi. Origin.

D

Is

* Orbicularis Oris. Albin.

Constrictor Oris. Cowp.

Les demi-orbiculaires, &c. Winsl.

‡ Levator Menti. Albin.

L'Incisif inferieur. Winsl.

Insertion. Is inserted into the skin of the chin,
 Use. which it draws upwards, together with
 the lower lip.

ELEVATOR LABII SUPERIORIS PRO-
 PRIUS †

Origin. ARISES broad and fleshy from all that
 portion of the Os maxillare that makes
 the lower part of the orbit, immediately
 above the hole that transmits the nerves
 and arterics to the cheeks, and admits
 their returning veins, being joined on
 each side by a narrow fleshy slip ||, the
 shortest coming from the Os Mali, near
 the origin of the Zygomaticus; the
 longest proceeding from all the upper
 process of the first named bone, where
 it joins the Os Frontis at the great Can-
 thus of the eye, and descends by the
 edge of the Ductus lachrymalis.

Is

† L'Incisif lateral. Winsl.

|| These fleshy slips are described by many
 authors as distinct muscles; the shortest being
 the Zygomaticus minor. Albin. & Winsl.
 and the longest is the Elevator Labii superio-
 ris aëque Nasi. Albin.

The muscles of the Lips.

27

Is inserted into the upper lip, sending some Fibrillæ to be spread on the Ala narium. Insertion.

Its use is to draw that lip outwards, and when both act in concert, to pull it upwards. Use.

DEPRESSOR LABII INFERIORIS PROPRIUS *

ARISES fleshy from the inferior and anterior part of the lower jaw, called the chin. Origin.

Is inserted into the under lip near its Sphincter. Insertion.

Its use is to pull the lower lip down, and a little outwards. Use.

DEPRESSOR LABII SUPERIORIS PROPRIUS, Cowper. §

ARISES thin and fleshy from the Os maxillare, immediately above the gums of the Dentes incisivi. Its origin is continued as far back as the foremost Dens Origin.

D 2 molaris,

* Le Quarré. Winsl.

§ Depressor alæ Nasi. Albin.

L'Incisif mirtoyen. Winsl.

The muscles of the Lips.

molaris, from whence it runs up under part of the Levator Labii superioris proprius, to its termination.

Insertion. Is inserted into the superior part of the upper lip and root of the Ala nasi.

Use. Its use is to draw downwards the parts in which it terminates.

The lips of a dog are moved by five pair of muscles and a sphincter.

The Zygomaticus has a great many of its fibres spread upon the Buccinator, whereby it is able to draw the lips more forcibly upwards and sideways.

Elevator Labii superioris arises fleshy from the lower or little angle of the orbit, growing broader as it descends to its large insertion into the upper lip, which it pulls upwards when this animal snarls, &c.

Depressor Labii inferioris comes from about the middle of the Rostrum, or lower jaw.

If you cut the gums above the Dentes incisivi of both lips, you will have a fair prospect of the Elevator Labii inferioris, and the Depressor Labii superioris, running, as in man.

C H A P. IX.

Of the muscles of the CHEEKS.

THE cheek, called Gena and Bucca, has no proper muscles of its own, being provided with two common to it, and some other parts; the first is common to it, with the lips; the second is common to it, the lower jaw, the lips, and most part of the skin of the face.

BUCCINATOR.

ARISES by two distinct beginnings Origin.
on each side, one tendinous and fleshy from the lower jaw, between its last Dens molaris, and the root of the forepart of its Processus coronæ; the other is fleshy from the upper jaw, between its last Dens molaris and the Processus pterigoides, from whose extremity also it arises tendinous, being continued between these two originations to the Pterigo-pharyngæus on one side, and the Mylo-pharyngæus on the other; from thence proceeding with straight fibres, and adhering to the membrane that co-

The muscles of the Cheeks.

vers the inside of the mouth, but without touching the gums of either jaw.

Insertion. Is inserted into the angle of the lips.

Use. Its use is not only to move the cheeks with the lips, but also to contract the cavity of the mouth, by bringing them inwards, and so thrust the meat between the teeth for its better comminution.

QUADRATUS GENÆ, vel LATISSIMUS
COLLI †,

Origin. ARISES broad, thin, and membranous, interlaced with abundance of carnous fibres, which in their ascent do all unite, and make one continued fleshy substance, from the Sternum between the first and second rib, from the Acromion and between these two, from the proper or investing membranes of the Pectoral and Deltoidal muscles.

Insertion. Is inserted into that space of the external Labrum, or lip of the lower jaw, that's between its commissure and the back-

† Tetragonus, Platysma myoides.
Le Peaucier. Winsl.

The muscles of the Cheeks.

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backmost origin of the Depressor labiorum communis, into the Buccinator, near the angle of the mouth, by a slip that runs up between the Depressor Labiorum communis and the Masseter, and membranous into the skin of the face. As these two muscles approach the chin, they are observed to decussate one another ; that is, part of the muscle on the right side runs over the other, and is fixed to the lower jaw on the left side, and part of the muscle of the left side runs under the other, and is inserted into the lower jaw on the right side.

Its use is to draw the cheeks and skin of the face downwards, and to assist the Digastric in opening the mouth. Use.

In a dog it is only part of the Membrana carnosa, expanded over the neck and the Musculus buccinator.

C H A P. X.

Of the muscles of the external EAR.

THE muscles of the auricle are common or proper; the common proceed either from the middle tendon of the Occipito frontalis, or from the Quadratus genæ, and move this part according to their respective insertions, whence they are divided into so many muscles, and named by authors from their use, as Attollens, seu Musculus Auriculæ anterior, deprimens, &c.

The proper muscles of the auricle, or outer part of the ear, are such as arise from the Os petrosum and Parietale, and are inserted into the Concha under the common. Their number is uncertain.

The muscles subservient to the motion of a dog's external ear are so very numerous, as well as small, that I think it needless to insist on a particular account of each of them, a description of two of the most remarkable being sufficient.

Retrahens

Retrahens ad collum arises from the union of the *Musculi cucullares*, above the second or third spinal process of the neck, and ends in the lateral and upper part of the Concha.

Erigens arises from the bony ridge of the *Os Occipitis*, and terminates by three fleshy portions into the outward ear. Its use being to erect or prick the ears.

C H A P. XI.

Of the muscles of the internal EAR, and auditory PASSAGE.

THE parts of the internal ear provided with muscles are the two little bones, called Malleus and Stapes; the hammer has three, and the stirrup one.

EXTERNUS AURIS, Aquapendent. vel
Jul. Caffer. Placent. *

ARISES fleshy from a roughness in the upper side of the Meatus auditorius about its middle.

Origin.

Is

* Laxator Tympani. Albin.

L'externe, ou superieur du Marteau.
Winfl.

Infertion. Is inferted by a long and slender tendon into the upper procefs of the Malleus, that adheres to the Membrana Tympani.

Ufe. Its ufe is to draw the hammer with the Membrana Tympani outwards.

In a dog it comes from the Os petrofum, oppofite to the long procefs of the Malleus.

INTERNUS AURIS, Eufiach. *

Origin. ARISES tendinous and fleshy from the beginning of the cartilaginous and extremity of the bony part of the Tuba Eufiachiana, and running in a long channel, excavated in the Proceffus petrofus; it grows tendinous as it enters the cavity of the barrel, and paffing over a little rifing made by the extremity of this pipe near the Feneftra ovalis,

Infertion. Is inferted into the posterior part of the handle of the Malleus, a little from its head.

Its

* Tenfor Tympani. Albin.

L'Interne du Marteau. Winfl.

Its use is to pull the hammer inwards, nearer the Os petrosum. Use.

N. B. The bone that some observe to be in the tendon of this muscle, is nothing else, in my opinion, but the extremity of the long channel in which it runs, broke off from the Os petrosum, and left adhering to the tendon.

OBLIQUUS AURIS, vel EXTERNUS,
Duvern. *

ARISES fleshy as the former, whence marching backwards through a channel in the upper and external part of the Tuba Eustachii, without entering the cavity of the barrel. Origin.

Is inserted into the slender process of the Malleus, that lies upon the edge of that oblique sinuosity that is most remarkable in the bony circle of a Fœtus. Insertion.

Its use is to draw the hammer forward, nearer that part of the temple-bone from which, in part, it takes its origin. Use.

* Externus Mallei. Albin.

L'Anterieur du Marteau. Winsl.

The muscles of the internal Ear, origin. Of this process Cæcilius Folius has given the best description ; in length it exceeds that of the Manubrium Malleoli, and in shape it very much resembles a small fish-bone.

In a dog it may be called Musculus glandiformis, or ovalis, because it appears like a glandulous lump of an oval, or roundish figure, which lies in a particular cavity dug for it in the Os petrosum, near the Foramen ovale, from the bottom of which it springs, and is inserted by a very slender tendon.

STAPIDÆUS, vel MUSCULUS STAPEDIS,
Duvern. *

Origin. ARISES fleshy from the bottom of a channel excavated in the Os petrosum, about the middle of the true Fallopian Aqueduct laterally.

Insertion. Is inserted tendinous into the side of the head of the Stapes.

Its use is to draw the Stapes upwards.

MUSCULUS

* Stapedius. Albin.

MUSCULUS MEATUS AUDITORII ***

ARISES from one of the discontinued cartilages of this passage, and

Is inserted into another, which it serves to approximate and draw nearer one another. It is only observable in a large and fleshy subject.

In a dog there are several little muscles, which come from one of the protuberating cartilages of the Concha, and end in another of them, which, by pulling them nearer, or drawing them farther from one another, may dilate or straiten the Porus acousticus, or auditory tube, for the fitter reception of sounds, as occasion may require.

C H A P. XII.

Of the muscles of the Os HY-
OIDES.

THE bone of the tongue, called Os hyois, has five pair of muscles, and one odd one, which are all common to it with the tongue and the larynx.

E

MYLO-

MYLO-HYOIDÆUS, Fallop.

- Origin. ARISES fleshy and a little tendinous from all the inside of the lower jaw, between the backmost Dens molaris, and the commissure of the two bones.
- Insertion. Is inserted into the lower edge of the basis of the Os hyoides.
- Use. Its use is to pull this bone upwards, forwards, and to either side, according as its fibres run.

GENIO-HYOIDÆUS.

- Origin. ARISES tendinous from a rough protuberance at the inside of the chin, or from the fore-part of the lower jaw, internally.
- Insertion. Is inserted into both the edges of the basis of the Os hyoides, remitting a fleshy slip to the beginning of each of its processes.
- Use. Its use is to draw this bone upwards and forwards.

STYLO-

STYLO-HYOIDÆUS *

ARISES by a round tendon from Origin. near the middle of the Processus styloformis.

Is inserted tendinous into the basis of the Os hyois near its Cornu, to which also it often adheres fleshy. Insertion.

N. B. The carnos belly of this muscle is sometimes divided on both sides for the passage of the middle tendon of the digastric, sometimes but on one side only, and sometimes it is unperforated on both sides.

Its use is to pull the bone of the tongue to one side, and a little upwards when both act in concert. Use.

STYLO-CHONDRO HYOIDÆUS, *** vel
STYLO-HYOIDÆUS ALTER, †

ARISES fleshy and tendinous from the Styloide Process, near the origin of the Stylo-pharyngæus, and running under the Cerato-glossus, Origin.

E 2

Is

* Stylo-cerato-hyoideus. Spigel.

† Stylo-hyoides novus. Santorin.

N. B. This little muscle is often wanting.

The muscles of the Os Hyoides.

Insertion. Is inserted into the cartilaginous appendix of the Os hyoides.

Use. Its use is to assist the former in pulling this bone upwards and laterally.

CORACO-HYOIDÆUS *

Origin. ARISES broad, thin, and fleshy from the superior Costa scapulæ, near its Sinus or Cavitas semilunaris, as also from some part of the ligament that runs from the edge of this cavity to the root of the Processus coracoides, thence ascending obliquely, it becomes tendinous between the Mastoidæus and Vena jugularis interna, but soon growing flesh again,

Insertion. Is inserted by a thin tendon into the basis of the Os hyois, between the termination of the Sterno-hyoides and its Cornu.

Use. Its use is to pull this bone obliquely downwards.

N. B.

* Costo-hyoides. Santorin.

L'Omoplat-hyoidien, ou l'omo-hyoidien.
Winflow.

The muscles of the Os Hyoides.

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N. B. R. Columbus first took notice of the true origin of the Coraco-hyoidæus.

STERNO-HYOIDÆUS *

ARISES fleshy and thin from the cartilaginous part of the first rib, the upper and inner part of the Os Pectoris, and from the adjoining inferior part of the Clavicula. Origin.

Is inserted between the middle of the basis of the Os hyoides and the Coraco-hyoides. Insertion.

Its use is to pull that bone directly downwards. Use.

A dog has neither the Stylo-chondro, nor the Coraco-hyoidæus; but instead of these it has two more, which are not to be found in the human body, viz.

Chondro - cerato - hyoidæus, which is a small fleshy muscle that comes from all the cartilaginous appendix of the bone Hyois,

E 3

and

* Le Sterno-hyoidien, ou Sterno-cleido-hyoidien. Winsl.

The muscles of the Os Hyoides.

and ends into all the shortest Process, or Cornu, that joins the Cartilago Thyreoidæa of the Larynx; its use being to draw them nearer one another. And

Inio-cerato-hyoidæus. This is a very short fleshy muscle, which arises from the fore-part of that process of the occiput, which gives origin to the digastric of the lower jaw, and is inserted near the extremity of the longest process of the Os hyoides, which it pulls backwards.

The *Stylo-hyoidæus* arises from the horn of the Os hyoides, near its adhesion to the Occiput, and, running across the digastric muscle is inserted into the basis of that bone. It is a long and slender fleshy muscle.

The *Sterno-hyoidæus* arises fleshy in common with the *Sterno-thyreoidæus*, from the inside of the cartilaginous part of the first rib next the Sternum; it parts from the aforesaid muscle about two inches or more above their united origin.

C H A P. XIII.

Of the muscles of the TONGUE.

THE tongue has four pair of muscles, which may be called proper, because they are all inserted into its own substance.

GENIO-GLOSSUS

ARISES tendinous from a rough protuberance in the inside of the fore-part of the lower jaw about the middle of the chin. Its fibres run in three different directions; the middlemost terminates about the middle of the tongue, the anterior is carried forwards towards its tip, and the posterior or last order runs obliquely backwards towards the root of the tongue, and by a narrow slip ascends on each side to the horns of the Os hyoides.

Origin.

Insertion.

Its use is to move the tongue according to the different direction of its

Use.

The muscles of the Tongue.

its fibres, *i. e.* to pull it forwards, and thrust it out of the mouth, to draw it into the mouth, or to bring the tip of the tongue downwards and backwards.

CERATO-GLOSSUS *

Origin. ARISES fleshy from three different places ; its first origin is broad and car-nous from the Cornu of the bone Hy-ois ; this is properly the Cerato-glossus : its second head comes from part of the basis of this bone, and is named Basio-glossus : the third beginning is derived from the cartilaginous appendage of the Hyoides, which some call Chondro-glossus : these three unite, and their fibres running in the same di-rection,

Infertion. Are inferted broad and thin near the root of the tongue laterally.

Use. Its use is to draw the tongue obliquely to one side ; but if both act at once, the tongue is pulled directly backwards, into the mouth.

N. B. In

* Le Hyo-glosse. Winsl.

N. B. In some subjects I have observed, that a great part of the Ceratoglossus did arise from the basis of the bone, and in some others I have found few or none of its fibres to spring from thence.

STYLO-GLOSSUS

ARISES tendinous and fleshy from the Origin.
Processus styloformis of the temple-bone,
and often also from a fleshy ligament
that is extended from that process to the
angle of the lower jaw.

Is inserted into the side of the tongue Insertion.
from its root to near its middle.

Its use is to draw the tongue laterally, Use.
but when both act, to pull it upwards
and inwards.

*In a dog it arises from the extremity of
the long process of the Os hyoides.*

LINGUALIS

ARISES pretty large and fleshy from Origin.
the basis of the tongue laterally, and
runs strait forwards between the Cerato
and Genio-glossus, to its tip, where it is
hard

hard to determine whether it ends there,
 Infertion. or if it returns circularly, after the same manner on the other side, to the root of the tongue again.

Use. Its use is to contract or narrow the substance of the tongue, and at the same time to bring it backwards and downwards

N. B. Lingualis was first described by R. Columbus, being thus named only by Spigelius.

C H A P. XIV.

Of the muscles of the LARYNX.

THE upper part or head of the Aspera Arteria, called Larynx, is made up of five cartilages, three of which are provided with muscles.

The Cartilago Thyreoidæa, or Scutiformis, has three muscles on each side.

HYO-THYREOIDÆUS *

Origin. **A**RISES fleshy from part of the basis, and almost all the Cornu of the Os hyoides.

Is

* Thyro-hyoidien, ou Hyo-thyroidien. Winsl.

The muscles of the Larynx.

47

Is inserted into the outside of a rough line that runs between the angles of the Cartilago scutiformis. Insertion.

Its use is to pull the Larynx upwards. Use.

STERNO-THYREOIDÆUS

ARISES fleshy from all the edge of the first bone of the Sternum internally between the cartilages of the first and second rib, from both which it receives two small beginnings. Origin.

Is inserted tendinous and fleshy into the surface of the above-mentioned rough line of the buckler-like cartilage. It very often remits a slip to the Cornu or Process of the Os hyois. Insertion.

Its use is to draw the Larynx downwards. Use.

In a dog the beginning of this muscle is confounded with that of the Sterno-hyoidæus.

CRICO-THYREOIDÆUS

ARISES fleshy from the fore-part of the Cartilago Cricoides. Origin.

Is inserted into the lunated and lower part of the Thyreoides. Insertion.

Its

The muscles of the Larynx.

Use.

Its use is to dilate the cavity of the Larynx, by drawing the Scutiformis outwards, and to one side.

Each of the Arytænoidal cartilages has three proper muscles, and two common to them both : the common are the two following.

ARYTÆNOIDÆUS MAJOR †

Origin.

ARISES fleshy from one of these cartilages near its juncture or articulation with the Cricoides, and running transversely of an equal breadth, with straight fibres,

Insertion.

Is inserted into all the same side of the other cartilage.

Use,

Its use is to shut the Rimula, or chink called Glottis, by bringing these two cartilages nearer one another.

ARYTÆNOIDÆUS MINOR *** †

Origin.

Is a very small muscle which runs upon the surface of the former, arising from that part of one of the Cartilagines Arytænoidææ next the Cricoides on one side

† Arytænoïdeus obliquus. Albin.

L'Arytenoïdien croisé. Winsl.

† Arytænoïdeus transversus. Alb. & Winsl.

The muscles of the Larynx.

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side, and terminating into that part of the other arytenoidal cartilage that is farthest from the Cricoides on the other side. Insertion.

Its use is to assist the former in its action, which is much strengthened by this manifest decussation of fibres. Use.

CRICO-ARYTENOIDÆUS POSTICUS

ARISES fleshy from the back part of the ring-like cartilage, and Origin.

Is inserted into the Guttalis near the following. Insertion.

Its use is to open the Rimula. Use.

CRICO-ARYTENOIDÆUS LATERALIS

ARISES fleshy from the Cartilago cricoides laterally. Origin.

Is inserted into the Arytenoides or Guttalis, under the implantation of the superior order of fibres belonging to the following muscle. Insertion.

Its use is to open the Glottis. Use.

THYREO-ARYTENOIDÆUS

ARISES from the whole length of the internal concave, and middle part of the Origin.

F

the

The muscles of the Larynx.

the Cartilago scutiformis, from whence its fibres proceed in three different orders; the uppermost terminates into the Guttalis, near the insertion of the Crico-arytenoidæus lateralis; the middlemost, which may be called Thyreo-glottis, runs up under this, and is spread upon the membrane that comes between the Glottis and arytenoidal cartilage; the lowermost is inserted into the anterior angle of this cartilage. The superior and inferior order of fibres do draw the cartilage, to which they are fixed, nearer the Scutiformis, and thereby do most adequately shut the Rimula or Glottis; the middlemost direction of fibres may help to pull the Epiglottis down when both act, or laterally when one only is contracted.

The fifth cartilage of the Larynx, called Epiglottis, is furnished with a pair of muscles in a dog, which I call Hyoglottus; it arises fleshy from the cartilaginous appendix of the Os hyoides internally, and partly also from its basis hard by the origin of the Basio-glossus; from thence each marches obliquely nearer

nearer one another to their united tendinous insertion, in the middle of the upper part of the Epiglottis, not far from its tip, which it serves to raise and lift up again after it has been depressed in swallowing.

C H A P. XV.

Of the muscles of the PHARYNX.

TH O' I take the upper part of the Oesophagus, or Pharynx, to be only made up of a pair of muscles, one on each side, which I call Pharyngæus, whose fleshy fibres running in different directions from distinct and various originals, do meet and unite upon the back of the glandulous membrane of the Fauces; yet, in imitation of the accurate Valsalva, I shall describe each different order by itself, and name it from the place whence it arises.

1. CEPHALO-PHARYNGÆUS. This order of fibres arises from a little rising, or Tubercle, in that process of the Os

F 2

Occipitis

The muscles of the Pharynx.

Occipitis that joins the Sphænoidal bone, not far from its great hole.

2. CHONDRO-PHARYNGÆUS, * * *

This order arises from the cartilaginous appendage of the Os hyoides.

3. CRICO-PHARYNGÆUS, Vals. Arises from the Cartilago cricoides, or Annularis.

4. GLOSSO - PHARYNGÆUS, Valsal. Arises from the root or upper part of the tongue laterally.

5. HYO-PHARYNGÆUS, Vals. Arises from the Cornu or process of the Os hyoides, wherefore I name it Hyo-cerato-pharyngæus.

6. MYLO-PHARYNGÆUS * * * † Arises from the lower jaw, near the last Dens molaris.

7. PTERIGO-PHARYNGÆUS, Cowp. Arises tendinous and fleshy from the Pterigoidal process of the Os sphænoidale.

8. SALPINGO - PHARYNGÆUS, * * * Arises from the extremity of the bony part

† Le Myloglosse. Winsl.

part of the Tuba Eustachii, commonly called the Aqueduct.

9. SYNDESMO-PHARYNGÆUS * * *
Arises from the ligament that ties the Cornu of the Os hyoides to the process of the Cartilago scutiformis.

10. STYLO-PHARYNGÆUS Arises fleshy from near the root of the Processus Styloformis.

11. THYREO - PHARYNGÆUS, Vals.
This last order of fibres arises from that rough line that is extended between the two angles of the Thyreoidal cartilage, as also from some of its upper side *.

Now,

* Young anatomists are greatly perplexed by the different accounts which authors have given of the muscles of the Pharynx; some reckoning them but two or three in number, whilst others have multiplied them to thirteen or fourteen on each side. Albinus's division of them seems to be the most natural of any. According to him, there are six pair of muscles belonging to the Pharynx, viz. Stylo-pharyngæus, three Constrictors, Salpingo-pharyngæus and Palato-pharyngæus.

The muscles of the Pharynx.

Origin.

Now, from these various beginnings does this muscle of the Pharynx arise, and

The **STYLO-PHARYNGÆUS**, Alb. Is the same muscle which Douglas described under that name.

The **CONSTRICtor INFERIOR**, Alb. Is composed by the Crico-pharyngæus and the Thyreo-pharyngæus of Douglas.

The **CONSTRICtor MEDIUS**, Alb. Comprehends the Hyo-pharyngæus, the Chondropharyngæus, and the Cephalo-pharyngæus of Douglas.

The **CONSTRICtor SUPERIOR**, Alb. Is chiefly made up of these packets of fibres which Douglas has described by the names of Glossopharyngæus, Mylo-pharyngæus, and Pterigo-pharyngæus.

The **PALATO-PHARYNGÆUS**, Alb. Is the Thyreo-staphilinus of Douglas, described in the following chapter.

The **SALPINGO-PHARYNGÆUS**, Alb. Is a very slender packet of fibres, which arises from the anterior extremity of the cartilaginous part of the Eustachian Tube, and running down upon the back part of the Pharynx, joins in with the inferior extremity of the Palato-pharyngæus. Vide Eustach. tab 42. fig. 4. and 6. where all these six muscles are delineated.

The muscles of the Pharynx.

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and is inserted into the membrane of the Fauces, where it meets with its fellow of the other side. As for its use, the fibres that spring from the Larynx, Os hyoides, and tongue, serve to contract the cavity of the gullet, and forward the aliment, &c. into the stomach. Those, which arise from the other parts above described, do all serve to enlarge and dilate the cavity of the gullet, in as much as they pull it out on all sides for the reception of the food, &c.

Insertion.

Use.

In a dog the Stylo-pharyngæus arises from near the extremity of the long Cornu of the Os hyoides, and the Salpingo-pharyngæus runs for some space at a distance from the Membrana Faucium, different from what it does in man.

C H A P.

C H A P. XVI.

Of the muscles of the UVULA.

THE Gargareon, or Uvula, has four pair of muscles.

GLOSSO-STAPHILINUS, Vals. *

Origin. ARISES fleshy from the side of the tongue.

Insertion. Is inserted near the middle of the Uvula laterally.

Use. Its use is to pull it to one side, and when both act to bring it nearer the tongue.

PALATO-STAPHILINUS *** †

Origin. ARISES fleshy from the middle of the Os Palati, near its juncture with its fellow of the other side, and running straight forward,

Insertion. Is inserted near the extremity of this duplicated glandulous membrane, called the Gargareon.

Its

* Glosso-palatinus. Santorin.

Constrictor Isthmi Faucium. Albin.

† Azygus Uvulæ. Les Staphylins, ou Epistaphylins. Winsl.

The muscles of the Uvula.

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Its use is to pull it forwards and Use.
downwards, which office was always
said to be performed by the Pterigo-
staphilinus internus, till Valsalva ap-
peared, who corrected that mistake,
and ascribed the muscle so called to
the tube of the ear as shall be shewn
hereafter.

N. B. The Palato-staphilinus seems to
have been partly known by Mr. Dionis,
a French surgeon: for in his Anatomy
of human bodies improved, he affirms
the Uvula to be formed by the union of
two little round muscles, that spring
from the Septum Nasi. If I had known
so much when I first described these
muscles, his name, and not my mark,
had been affixed unto them; and I had
only given their true description, which
he has erred in. This same author does
likewise very accurately describe the two
arches that reach from the sides of the
Uvula to the tongue, which are after-
wards reckoned two new muscles by
Valsalva, under the name of Glosso-
staphilini.

SALPINGO-

The muscles of the Uvula.

SALPINGO-STAPHILINUS, Vals. PTERIGO-STAPHILINUS EXTERNUS VULGO *

Origin. ARISES fleshy from the bony part of the tube of the ear, and

Insertion. Is inserted into the basis of the Uvula, where it joins fibres with its partner muscle on the other side.

Use. Its use is to draw the Uvula upwards and backwards.

The circular fibres of the Thyreo-staphilini cover the last described muscles.

N. B. SALPINGO-STAPHILINUS is a pretty thick and round muscle, its true origination being pointed at by Vesslingius in his Syntagm. Anatom. cap. xi. pag. mihi 175. long before Valsalva christened it by this name.

THYREO-STAPHILINUS *** †

Origin. ARISES fleshy from the edge of the upper part of the Cartilago-Thyreoides, between

• Levator Palati mollis. Albin.

Le Petro-salpingo-staphylin, ou Salpingo-staphylin interne. Winsl.

† Palato-pharyngæus. Albin.

Le Thyreo-pharyngo-staphylin. Winsl.

between the Thyreo-pharyngæus and the Membrana Faucium, from thence it ascends straight upwards, being much dilated as it approaches the Uvula, upon the upper side of which it is very broad.

And here it is not easy to determine, Insertion. even when the membrane that covers it is removed, whether it unites with its partner, or if its fibres surround the Gargareon, and then descend to the upper part of the Cartilago scutiformis on the other side.

In deglutition, when this pair of muscles act, the Foramina Narium are in a great measure shut to hinder the passing of any thing through the nose that is taken in at the mouth. Use.

In a dog between the tonsils are placed two spongy bodies, like teats, at a little distance from one another, formed of a production or folding of the glandulous membrane, that lines the mouth, and in all respects seem analogous to that part in man; each of them is provided with two muscles; one to pull them down, which arises and is inserted like the Glossopharyngeus in man; the other draws them

60 The muscles of the Tuba Eustachiana.

them upwards from the passage into the nose. It arises, proceeds, and is inserted, like my Palato-staphilinus, being a very long and slender muscle.

C H A P. XVII.

Of the muscles of the TUBA EUSTACHIANA.

THE canal of communication between the mouth and barrel of the ear, Aquæductus Fallopii vulgo, is by that accurate anatomist Antonius Val-salva, called Tuba, from its figure, and Eustachiana, from its first discoverer Bartholomæus Eustachius; for to dilate and keep it open, he describes a new muscle, for he first found out that the muscle called Pterigo-staphilinus internus and Sphæno-pterigo-palatinus does not belong to the Uvula, but unto this passage.

MUSCULUS

The muscles of the Tuba Eustachiana. 61

MUSCULUS TUBÆ NOVUS Valsal. vel
PALATO-SALPINGÆUS *** †

In my late enquiries into the muscular structure of the Fauces, I have always observed that this muscle

ARISES broad and tendinous from Origin.
the edge of all the lunated part of the Os Palati, several of its fibres being spread upon the membrane that covers the Foramen Narium, then growing into a small thin tendon, it's reflected about the hook-like process of the inner Ala of the Processus pterigoides; but soon turning into a narrow and thin fleshy belly, it runs close along the inside of the Musculus pterigoidæus internus, and

Is inserted carnos into all the membranous, fleshy and cartilaginous part of the tube. Insertion.

Its use is to dilate and keep open this channel, as Valsalva first has most ingeniously taken notice. Use.

G

Long

† Circumflexus Palati. Albin.

Le Sphæno-salpingo-staphylin. Winsl.

62 The muscles of the Tuba Eustachiana.

Long before the excellent treatise of this author fell into my hands, I demonstrated a muscle something analogous to this in a dog, which I name with respect to its origin, progress and termination,

TYMPANO-PETROSO-SALPINGO- PTERIGO-PALATINUS

Arises from the Os petrosum within the cavity of the Tympanum, or barrel opposite to the Musculus ovalis, and going out by the side of the Ductus a Palato ad Aurem, to the membranous and fleshy part of which it firmly adheres, becomes carnosus, and continues so, till it arrives at the sharp wing-like process of the Os sphænoideale, where it grows tendinous; and, being reflected over the same, its fibres are again dilated and expanded over the membrane that covers the slits, or Foramina Narium, where it seems to join with its fellow on the other side.

The use of this muscle, is to compress the palatine glands that lie above it in great clusters and heaps, by pulling up the membrane, which is a very useful contrivance to forward the secretion of their salival juices,
that

that are of so great use in time of mastication for softening the hard bones, and such like substances as this animal usually feeds upon, and farther for promoting their dissolution in the stomach ; besides, it may also be subservient to the dilatation of the Eustachian Tube.

N. B. In my humble opinion, with all submission to the better judgment of others, the Musculus Tubæ novus may well be divided into two distinct muscles, as upon occasion I think I can very easily demonstrate. The first I bring broad and tendinous from the Os Palati, and fix its termination into the tube of the ear, which it serves to dilate. The other, which is much smaller, seems to derive its origin from the Apex of the bony part of the foresaid tube : in its ascent it closely adheres to the first, but at the hook-like process of the bone its small tendon departs from it, and growing broad and thin, is soon spread upon the Membrana Faucium, above the Foramina Narium, at the sides of the Uvula. Its use being, when it acts with

its partner, to antagonize the Thyro-staphilinus.

C H A P. XVIII.

Of the muscles of the HEAD, appearing or situate in the fore and lateral part of the NECK.

THE head has twelve muscles on each side; five offer themselves to be described in this position of the body; the rest appearing when the subject lies prone.

MASTOIDÆUS *

Origin. ARISES tendinous, and sometimes a little fleshy, from the upper part of the Os Pectoris, and carnosus from near one half of the Clavicula next it.

Insertion. Is inserted by a thick and strong tendon into the point or forepart of the
Processus

* Le Mastoïdien antérieur, ou Sterno-cleido-mastoïdien. Winsl.

Sterno-mastoïdæus una cum cleido-mastoïdæo. Albin.

Processus mastoidæus, and by a broad and thin tendinous expansion running obliquely upwards and backwards into the rest of that process, and the adjacent part of the Os petrosum externally, hard by the Lambdoidal Suture. When this acts, the head is turned to the opposite side, and when both act together, they bend the head forwards. Use.

In a dog it arises by an acute tendineo-carnous beginning from the upper part of the Os Pectoris, and growing into a thick and fleshy belly continues united with its fellow half way up the Trachæa; then receding from one another, each marches obliquely to its double termination. one by a round tendon into the edge of a cavity made behind the bony part of the Meatus Auditorius, the other by a broad, thin and membranous tendon into the lateral part of the Os Occipitis.

RECTUS INTERNUS MAJOR *

ARISES from the anterior points of Origin. the transverse processes of the third, fourth, fifth and sixth Vertebra of the neck,

G 3

* Le Droit anterieur long. Winsl.

The Muscles of the Head.

neck, by so many double tendons, which soon become fleshy.

Insertion. Is inserted into the anterior process of the Os Occipitis, near its conjunction with the Os sphænoides.

Use. Its use is to bend the head forwards.

In a dog it arises tendineo-carnous from the fore and internal part of all the transverse processes of the neck, except that of the first, on the inside of which it is reflected in its ascent to the head, where it terminates in a little dimple made in the occipital bone.

RECTUS INTERNUS MINOR, Cowp. *

Origin. ARISES fleshy from the fore part of the body of the first Vertebra Colli.

Insertion. Is inserted near the root of the Condiloide process of the Occiput under the former.

Use. Its use is to nod the head forwards.

RECTUS LATERALIS, Fallop. §

Origin. ARISES fleshy from the transverse process of the first Vertebra Colli.

Is

* Le Droit antérieur court. Winsl.

§ Le premier transversaire antérieur. Winsl.

The muscles of the Head.

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Is inserted partly into the Os Occipitis, and partly into the Os Temporis, near the Processus mamillaris. Insertion.

Its use is to nod or bend the head a little to one side. Use.

MUSCULUS CAPUT CONCUTIENS *

ARISES fleshy from the oblique process of the second and third Vertebra Colli, and ascending obliquely backwards, Origin.

Is inserted near the root of the transverse process of the first Vertebra. Insertion.

Its use is to shake the head ; for the first Vertebra being thereby pulled to one side, the head must of necessity obey that motion by virtue of its articulation with the same. Use.

In a dog it is yet much more conspicuous, arising by two fleshy heads from the forepart of the oblique process of the second Vertebra Colli, and by one from the third, which uniting ascend obliquely, and terminate into the

* Le second tranversaire anterieur. Winsl.
Sextus intertransvers. Prior. Colli. Albin.

the transverse process of the first, between the Levator Scapulæ major and the Obliquus inferior.

C H A P. XIX.

Of the muscles of the NECK, that lie on its fore part.

THE neck or Collum has six muscles on each side, which I distinguish into common and proper: the proper are such whose use is confined to the Vertebrae of the neck only, as the Interspinales, the Intertransversales, and the Intervertebrales; the common are equally subservient to the motions of the neck and head. Of all these there is only one pair that appear in this posture of the body.

L O N G U S

Origin. ARISES tendineo-carnous from the bodies of the four or five superior Vertebrae of the Thorax laterally.

Insertion. Is inserted into the forepart of the four lowermost Vertebrae of the neck by
so

The muscles of the lower Jaw.

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so many small tendons covered over with flesh, into the third Vertebra by a small tendon, into the second by a very long and broad one, and into the first by one that is rounder, but not so large, being fleshy on both sides; it also fastened to some of the transverse processes of the neck near their roots by small tendons.

Its use is to bend the neck to one side, but if both act to bring it directly forwards.

In a dog it appears as if it were divided into as many distinct muscles by tendinous lines as there are Vertebrae in the neck.

N. B. The Sceleni belong to the Thorax.

C H A P. XX.

Of the muscles of the lower Jaw.

TH E Maxilla inferior has five pair of proper muscles, and one pair common to it, with the cheeks, &c. viz. The Quadratus Genæ, called by Galen,

The muscles of the lower Jaw.

Galen, *Platysma myoides*, already described.

TEMPORALIS *

Origin.

ARISES fleshy from the anterior and lower part of the parietal bone laterally, from all the *Pars squamosa* of the temple-bone, from a little rising in the lateral part of the *Os Frontis*, and from the external part of its process, from part of the *Os Mali* internally adjoining to it, and from the upper part of the lateral process of the sphenoidal bone; from these distant origins its fleshy fibres tend towards the *Os jugale*, under which they pass.

Insertion.

Is inserted tendinous into the upper part of the *Processus coronæ*, in the duplicature of which tendon this *Processus* is inclosed as in a sheath, being continued down all its fore part to near the last *Dens molaris*, and tendinous and fleshy into the posterior part of this process, as far back as its neck.

Use.

Its use is to pull the lower Jaw upwards.

N. B. The

* *Le Crotaphite*. Winfl.

The muscles of the lower Jaw.

71.

N. B. The Crotaphite, or temporal muscle, is covered with a particular tendinous membrane, that springs from the bones, which give origin to the upper and semicircular part of this muscle, and passing over the same, contracts like it, and is inserted into all the Os jugale, and the adjoining part of the Os Frontis. Its use is to fortify this muscle in its action, by bracing it down at that time. When this membrane is removed, we meet with a few thin fleshy fibres, which terminate in the broad middle tendon of the muscle just as it passes under the yoke bone. The under side of this tendon, which appears as if it were composed of several small ones closely conjoined, is lined as it were by a great many more fleshy fibres to prevent its being injured by the hardness or roughness of the subjacent bones. It runs down the two edges of a Sulcus in the forepart of the Processus coronæ tendinous and fleshy.

I have several observations relating to the structure of this muscle, which I design

The muscles of the lower Jaw.

sign to communicate, with many more, on a proper occasion.

In a dog it is a very thick and strong muscle, to the bulk of which the bigness of its head is much owing. It arises fleshy from the knob of the Occiput, the ridge or eminence between the two parietal bones, and some part of the Os Frontis, adhering to the cartilaginous ligament that fences the upper part of the orbit, the bone being here discontinued.

M A S S E T E R

Origin.

ARISES by three tendinous and fleshy heads, which run in different directions. The first comes from the Os maxillare, where it joins the Os Mali, and from all the edge of the last named bone, which makes the ball of the cheek. The second

Springs from the process of that bone, and the anterior part of the Apophysis of the Os squamosum; the fibres of these two beginnings intersect one another. The third head

ARISES

Arises from all the inner edge of the Os jugale, being easily separated from its other beginnings. The first two heads are

Inserted into the inferior and external part of the lower jaw, from the angle to near its middle. The last head runs down straight, and is inserted tendineo-carnous into all the outside of the Processus Coronæ, and the neck of the lower jaw, Insertion.

Its use is to pull the jaw upwards, and by reason of the above mentioned decussation, to move it backwards and forwards, for the better chewing and grinding of the meat. Use.

In a dog it arises from most part of the Os jugale, and by a strong tendon from a protuberance in the Maxilla superior, a little above the last Dens molaris save one, Is inserted into a sharp process on the angle of the lower jaw below the condyle.

DIGASTRICUS *

ARISES tendineo-carnous from the sides of a considerable Sulcus excavated Origin.

H near

* Biventer Maxillæ. Albin.

The muscles of the lower Jaw.

near the root of the Mastoidal process internally ; its middle tendon sometimes passes through the Stylo-hyoidæus, but always through a ligament that comes from the Os hyoides, to which bone it is also fastened by tendinous fibres.

Insertion. Is inserted tendinous and fleshy into the edge of the lower jaw, near its Commissure, above the Mylo-hyoidæus.

Use. Its use is to pull the lower jaw downwards, being assisted by the Latissimus Colli when both act ; but when one only is contracted, the Maxilla is moved outwardly to one side.

In a dog it has but one belly, which is very thick and large, arising fleshy, interspersed with tendinous fibres from an acute bony process between the Processus mammillaris and the condyle of the Occiput ; and terminates about the middle of the Maxilla by a large insertion.

PTERIGOIDÆUS INTERNUS *

Origin. ARISES by tendinous and fleshy fibres from the inner and upper part of the largest

* Le grand Pterigoidien. Winsl.

The muscles of the lower Jaw.

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largest wing of the pterigoidal process, possessing all that space or cavity between the two wings; besides, it has a second origin from that part of the Os Palati that is engaged between these two Alæ.

Is inserted into the inferior part of the lower jaw, near its angle internally. Insertion.

Its use is to draw the jaw to one side, Use. but if both act in concert, they must assist the temporal muscle in drawing it up.

PTERIGOIDÆUS EXTERNUS * Fall.

ARISES by two distinct beginnings, Origin. one tendineo-carnous from the edge of the external or broadest wing of the Processus pterigoides, and from part of the Os maxillare adjoining to it. The other is fleshy from two or three asperities in the lateral process of the Os sphænoidale, near the slit that transmits the blood vessels, &c. to the eye; as also from part of the Os squamosum

H 2 sum

* Le petit pterigoidien. Winfl.

The muscles of the lower Jaw.

sum near the cavity that receives the condyle of the jaw.

Insertion. Is inserted into a cavity in the neck of the *Processus Condylodes* internally, some of its fibres running up upon the membrane that fastens the moving cartilage to the said bone.

N. B. This moveable cartilage receives in like manner some fleshy fibres from the temporal and *masseter* muscles.

Use. Its use is to pull the lower jaw forwards, and thrust the teeth out beyond those of the upper jaw.

Because in a dog these two pterigoidal muscles do both arise from the same side of the Processus aliformis, I choose to call the first Major, and the second or last described Minor, with respect to their different bigness.

C H A P. XXI.

Of the muscles of the THORAX,
that appear on its fore part, the
body lying supine.

RESPIRATION consists in the
alternate dilatation and contrac-
tion of the cavity of the thorax or
chest, which two necessary motions are
chiefly performed by thirteen pair of
muscles, of which some dilate and
widen the Thorax, by pulling the ribs
upwards and outwards in inspiration for
the reception of the air into the lungs,
others contract and narrow its capacity,
by pulling them downwards for the ex-
pulsion of the air from the lungs; and
again, some assist in both these actions,
as the Diaphragm does.

S C A L E N U S.

This may be divided into four di-
stinct muscles. The first *, or that next

H 3 the

* Scalenus prior. Albin.

La portion anterieure du premiere Sca-
lene. Winsl.

The muscles of the Thorax.

the gullet, arises tendinous from the fourth, fifth, and sixth transverse process of the neck, and

Insertion. Is inserted tendineo-carnous into the upper side of the first rib, near its cartilage.

Origin. The second * arises from the second, third, fourth, fifth, and sixth transverse process of the neck by so many tendons, and

Insertion. Terminates into the first rib, some part of it being expanded over the fourth Scalenus.

Origin. The third † arises from the fifth and sixth transverse process of the neck, and

Insertion. Is inserted into the upper edge of the second rib.

The

* Scalenus medius. Albin.

La portion postérieure du premier Scapène. Winsl.

† Scalenus posticus. Albin.

La portion postérieure du second Scapène. Winsl.

The fourth * comes from the sixth Origin. and seventh transverse process of the neck.

Is inserted into the first rib, near its Insertion. articulation with the Vertebra.

They all assist in the elevation of the Use, ribs, and widening of the chest.

These muscles in a dog differ from the human in their number and insertions; for there are but three of them, and the insertion of the first, or innermost, is into the first rib; that of the second or middlemost, which is broad, fleshy and thin, is into the fifth or sixth rib, counting from above downwards.

N. B. What Galen, Vesalius, and others, reckoned as the upper part or insertion of the Rectus Abdominis in apes, monkeys, dogs, &c. I have discovered to be a very distinct muscle, which arises fleshy from the first rib, and turning tendinous, is inserted into the Os Pectoris, under the tendon of the Rectus, the fibres of which are observed.

* N. B. The fourth Scalenus of Douglas is described as one of the Levatores Costarum by Albinus and Winslow.

served to intersect one another. I call it, *Musculus in summo Thorace situs*.

SUBCLAVIUS

Origin. ARISES tendinous from the Clavicula, just by its connexion with the upper part of the *Processus coracoides Scapulae*, as also from the root of that process, closely adhering to the ligament that runs between it and the Clavicula. It soon becomes fleshy, and adheres to all the inferior part of that bone, near the extremity of which it runs off obliquely, and growing tendinous,

Insertion. Is inserted into the superior part of the first rib, near the ligament that connects the Clavicle to the same.

Use. Its use is to pull the first rib upwards.

This is wanting in a dog.

INTERCOSTALES

Origin. ARISE from the lower edge of each superior rib, and

Terminate

The muscles of the Thorax.

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Terminate in the upper edge of each inferior rib ; that is, the Externi run obliquely from the back part forward, and the Interni from the fore part backwards, their fibres intersecting one another, not unlike the two strokes of the letter X. Insercion.

They both serve to dilate the capacity of the Thorax *. Uſe.

TRIANGULARIS †

ARISES fleshy and a little tendinous from all the length of the Cartilago enfiformis laterally, and from the edge of the lower part of the Os Peëtoris, from whence its fibres ascend obliquely upwards and outwards. Origin.

Is inserted into the cartilaginous endings of the fifth, fourth, and third true ribs Insercion

* N. B. The internal Intercoſtals are deficient between the spine and the angle of the ribs, and the external are wanting near the Sternum. See a reason given for this by the ingenious Dr. Monro, in vol. i. art. xx. of Essays and Observations physical and literary.

† Les Sterno-coſtaux communement le Triangulaire du Sternum. Winſl.

The muscles of the Thorax.

ribs near their conjunction with the bones.

Use.

Its use is to contract the cavity of the Thorax, by depressing the cartilaginous part of these ribs.

In a dog this pair of muscles is much larger than in man ; and it is not improbable, that in this animal the discharge of part of the superfluous Serum of the blood (carried off in man by the excretory ducts of the miliary cutaneous glands, which a dog is destitute of) by Halitus, or by a more plentiful secretion in their salival glands, may be much promoted by the joint action of these muscles ; for we may observe, after a great fatigue, or any accelerated motion of the blood, while this creature lies or runs with its tongue lolling out, and breathes prodigious fast, there is a great deal of saliva separated.

D I A P H R A G M A

Is made up of two muscles. The Superior

Origin.

A R I S E S by two fleshy beginnings from the extremity of the Cartilago ensiformis laterally, from part of the cartilages

tilages of the seventh rib, and from the lower edge of the cartilaginous endings of all the inferior ribs, and the bony part of the last. The fibres from the Cartilago ensiformis are carried straight down, whereas all those from the ribs run obliquely inwards. The inferior muscle

ARISES on each side of the Vertebrae Lumborum by the following distinct beginnings. Origin.

1. Is fleshy from the side of the first Vertebra of the loins.

2. Is tendinous from the fore part of the second, third, and sometimes fourth Vertebra. This tendon is almost inseparable from some part of its fellow on the other side.

3. Is tendineo-carnous from the side of the second Vertebra, and often from the third also, especially on one side.

4. Its fourth origin is by a thin tendon from the root of the transverse process of the second Vertebra Lumborum ;
between

The muscles of the Thorax.

between this and the last rib the Triangularis runs up to its termination.

Both these muscles join in a middle tendon. The midriff is perforated in its tendinous part by the ascending Vena Cava, and in the fleshy part of the superior muscle by the descending Gula, and Par vagum. Between its two tendinous productions, as they call them, the great artery descends, and the Ductus Thoracicus ascends from the receptaculum Chyli. Between these tendons on each side, and the body of the first Vertebra Lumborum laterally, there is a fissure through which the Intercoastal Nerves descend, and the Vena azygos proceeding from the Cava below the Emulgent, ascends on the right side. Between its adhesion to the side of this Vertebra and its transverse process, it makes as it were an arch with a tendinous border, under which the upper part of the Psoas comes from the last Vertebra Dorsi, and the tendon of the Quadratus Lumborum passes that way to its termination there.

In

In inspiration its superior surface is contracted, and becomes more plain, whereby the cavity of the Thorax is enlarged to give more liberty to the lungs to receive the air, and the Viscera of the Abdomen are compressed for the distribution of the chyle, &c. In expiration its surface is convex towards the Thorax, whereby its cavity is lessened, and the air expelled out of the lungs.

In a dog the inferior muscle of the Diaphragm arises by four tendons, two short and two long.

COSTARUM DEPRESSORES PROPRII.

Cowperi *

ARISE tendinous from the upper part of the rib near its juncture with the transverse process of the Vertebra, but soon spreading into a broad and thin fleshy belly, they march obliquely upwards under the Pleura over one rib, and terminate into that next above it ; in number they are ten, being expanded	Origin.
I	all
all	

* Les Sous-costaux. Winsl.

Intercoſtalium internarum partes. Albin.

all over the inside of the ribs from the back to near the middle.

Use.

Their use is to depress the ribs. Mr. Cowper discovered these muscles some time ago, and having favoured me with his observation, I have named them, as above, from their use.

C H A P. XXII.

Of the muscles of the BLADDER of URINE.

THE Vesica Urinaria has two muscles.

S P H I N C T E R

Is only a few small orbicular fleshy fibres, placed under the external coat of the bladder round its neck.

D E T R U S O R U R I N Æ.

This muscle is only the second coat of the bladder, composed of muscular fibres, which run in different directions, upon the contraction of which the neck
of

of the bladder opens, and the urine is forcibly squeezed out.

C H A P. XXIII.

Of the muscles of the ANUS.

THE extremity of the Intestinum rectum, called Anus and Podex, is provided with five muscles, two pair called Levatores, and a single one, which is its Sphincter.

LEVATOR MAGNUS, seu INTERNUS, *

ARISES from the Os Pubis between its juncture and the hole common to it with the Ischion, from the tendon that covers the Marsupialis, and from the acute process of the last named bone ; between which and the lower part of the Os Coccygis it adheres to the Musculus Coccygæus, being both covered with one membrane. From this large beginning its fibres contract as it descends over the Marsupialis, having its

Origin.

I 2

surface,

* Levator Ani. Albin. & Winsl.

The muscles of the Anus.

surface, which respects the cavity of the Abdomen, all covered with a tendinous membrane, and uniting with its fellow on the back of the Intestinum rectum, which they cover on all sides, except where the Prostrates and bulb of the Urethra adhere to it.

Insertion. Is inserted into the Sphincter, its upper part being firmly annexed to the Os Coccygis.

Use. Its use is to draw the Anus upwards after the evacuation of the excrements, and in some measure to shut it also ; at other times it keeps this gut from falling too low, which always happens in a relaxation of its fibres in a palsy.

In a dog, before it terminates, it appears divided into three or four portions, one of which on each side leaves the Rectum, and is inserted into the Cauda, which it depresses after the animal has thrust out its excrements.

LEVATOR

LEVATOR PARVUS, seu EXTERNUS, Riol. *

ARISES tendinous and fleshy from the protuberance or knob of the Ischium, from whence it runs transversely to its termination into the Sphincter Ani, near the bulb of the Urethra.

Origin. Insertion. Its use is to assist the former. Use.

This is wanting in a dog.

SPHINCTER.

The Anus has two Sphincters ; the first may be called Externus or Cutaneus, which surrounds the Podex about the breadth of one inch, being placed immediately between the skin and the fat. The second is named Internus and Vaginalis, whose fleshy fibres encompass the lower end of the Intestinum rectum, to the breadth of about an inch, being forwards connected to the Accelerator Urinæ, and backwards to the Levator major.

I 3

Its

* Transversus Penis.

Transversus Perinæi. Albin.

Le Transversale de l'Urethre. Winsl.

The muscles of the Scapula.

Use.

Its use is to hinder the involuntary excretion of the Fæces, by shutting up or closing the passage of the Rectum.

In a dog its circular fibres do not embrace the extremity of the Rectum so high as in man, and the reason of it is plain, because the pressure and weight of the Fæces Alvinæ is not so great on this part in a dog, the position of its body being prone, or horizontal, as it must be in man, whose posture is erect.

C H A P. XXIV.

Of the muscles of the SCAPULA.

THE shoulder-blade is moved by three pair of proper muscles, and two pair common to it with the Thorax, viz. the Serratus major Anticus, and Serratus minor Anticus.

TRAPEZIUS, seu CUCULLARIS,

Origin.

ARISES by a thick and short tendon from the lower part of a protuberance in the occipital bone backwards, and from the rough line that is extended from

The muscles of the Scapula.

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from thence towards the *Processus mammillaris* by a thin membranous tendon, which covers some part of the *Complexus* and *Splenius*; besides, it arises tendinous from the spine of the last *Vertebra* of the neck, and from all the spines of the back, except the two lowermost.

Is inserted fleshy into the broad and posterior part of the *Clavicula*, tendineo-carnous into one half of the *Acromion*, and into almost all the spine of the *Scapula*. Insertion.

According to the three directions of its fibres it moves the *Scapula* variously, for its straight ones draw it directly backward, its obliquely descending pull it obliquely upward; and its obliquely ascending bring it obliquely downwards and backwards. Use.

N. B. Galen divides the *Trapezius* into two muscles, viz. the superior and the inferior. The first he calls *Trapezia*, and to the second later anatomists have given the name of *Cuculla*, from whence they are both commonly denominated *Cucullares*.

The muscles of the Scapula.

Cucullares. The inferior part of this muscle grows a little tendinous before it is inserted into the back part of the Spina Scapulæ; its upper part from the Os Occipitis to the spinal process of the last Vertebra Colli, is inseparably united to its fellow of the other side.

In a dog its superior origin comes from all the Ligamentum Colli that is below the rise of the Levator humeri proprius; that part of it, which resembles the Cuculla springs from about the middle of the Vertebrae of the back; that series of fibres which pulls the Scapula directly backwards unites with the upper triangular part of this muscle by a thin tendon.

The clavicle being wanting in a dog, it has no insertion there.

ELEVATOR, seu MUSCULUS PATIENTIÆ, *

Origin.

ARISES fleshy from the first, second third, and sometimes fourth transverse processes of the Vertebrae Colli by so many distinct slips, which soon afterwards do all unite.

Is

* L'Angulaire ou Releveur propre. Winfl.

The muscles of the Scapula.

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Is inserted fleshy into that part of the *Basis Scapulæ* that is between its spine and superior angle. Insertion.

Its use is to pull the Scapula upwards and a little forwards. Use.

The elevation of this part in a dog is performed by two muscles, viz.

Levator major, vel anterior, Arises fleshy from the broad transverse process of the first Vertebra Colli. Is inserted in the upper part of the Spina Scapulæ, near its extremity, which makes the Acromion in man.

Levator Scapulæ minor, vel posterior, Arises tendinous from the Occiput, near its ridge, and descending close by the long portion of the Rhomboides, is inserted by a small tendon into the basis of that bone, near its upper angle.

R H O M B O I D E S.

This muscle I find always divided into two distinct fleshy portions, joined by an intervening membrane. The uppermost *, which is the least, arises Origin. tendinous from the last spinal process of

* Romboïdeus minor. Alb.

The muscles of the Scapula.

of the neck, and some part of the Ligamentum Colli next above it; the inferior part of this muscle * arises tendinous from the spines of the four or five superior Vertebræ Dorſi. The upper part terminates into the basis of the Scapula, partly above, but chiefly below its Spine; and the inferior part is inserted into almost all the remaining part of the basis.

Use. Its use is to draw the Scapula obliquely upwards, and directly backwards.

In a dog it arises fleshy from all the Ligamentum Colli, which growing broader as it descends, unites with that portion coming from the spines of the back, near the upper angle of the Scapula.

* Romboïdeus major. Ablin.

C H A P. XXV.

Of the muscles of the THORAX,
that appear in dissection, the
body lying prone.

IN the description of the Musculi Thoracis, which appear on its forepart, I forgot to premise their division into proper and common. The use of the first is confined only to the chest, but the latter are subservient to other parts, as well as it. Thus the Serrati Antici contribute to the motions of the Scapulæ, the Sacro-lumbi to the extension of the back, and the Scaleni move the neck towards the shoulder or first rib.

SERRATUS MAJOR ANTICUS *

ARISES fleshy from the whole basis Origin.
of the Scapula internally, between the
insertion of the Rhomboides, and the
origin of the Subscapularis, being folded
as

* Serratus magnus. Albin. & Winsl.

as it were about the two angles of the Scapula.

Insertion. Is inserted into the eight superior ribs by an equal number of fleshy Digituli.

Use. Its use is to dilate the Thorax, by pulling up the ribs, and according to some, to move the Scapula, into which (they alledge) it is inserted, forwards and downwards.

In a dog it arises fleshy from the five inferior transverse processes of the Vertebrae Colli by so many different heads, and tendineo-carnous from the seven superior ribs. The first, or uppermost order of its fibres, run obliquely downwards to their insertion into part of the Basis Scapulæ internally. The second order that comes from the ribs ascend obliquely, and are implanted not only into the Basis Scapulæ, but also broad and fleshy into part of its concave side. Its use in this animal is peculiar to the Scapula, which it moves according to the various direction of its fibres; and besides, it keeps the shoulder-blade from starting out, or rising up too high, when this animal stands or runs.

SERRATUS

SERRATUS MINOR ANTICUS *

ARISES tendinous from the Proccus coracoides Scapulæ, but soon grows fleshy and broad. Origin.

Is inserted tendineo-carnous into the lower edge of the bony part of the third, fourth and fifth rib. Insertion.

Its use is either to assist the former, or to draw the Scapula forwards. Use.

This is wanting in a dog.

SERRATUS SUPERIOR POSTICUS

ARISES by a broad and thin tendon, from the lower part of the Ligamentum Colli, or rather from the tendinous union of the Splenii, from the acute process of the last Vertebra of the neck, and from two or three of the uppermost of the back. Origin.

Is inserted into the second, third and fourth ribs by as many particular fleshy slips. Insertion.

Its use is to expand the Thorax in the elevation of the ribs. Use.

K

SERRATUS

* Serratus Anticus. Albin.

Le petit Pectoral. Winsl.

SERRATUS INFERIOR POSTICUS

Origin. ARISES by a broad thin tendon from the spinal processes of the two inferior Vertebrae of the back, and from as many or more of the superior of the loins.

Insertion. Is inserted fleshy into the lower edge of the three or four inferior ribs, tho' seldom into the last, but at a greater distance from the Obliquus Abdominis externus, than will admit of any indentation between those two muscles.

Use Its use is to depress so many of the ribs, or at least to accelerate their motion downwards,

In a dog the Serratus superior posticus arises by a thin tendon from the lower part of the Ligamentum Colli, its last acute process, and from the eight superior processes of the back. Its insertion is into the nine upper most ribs, excepting the first, by so many distinct fleshy Digituli. Its tendon joins in with that of the Serratus inferior posticus, and so makes as it were a strong tendinous bandage, which keeping the subjacent muscles
very

very close together, does vastly strengthen them in their actions.

S A C R O - L U M B A L I S

ARISES outwardly tendinous, and inwardly fleshy, in common with the Longissimus Dorsi, from the single uppermost spines of the Os sacrum, from the posterior part of the spine of the Ilium, from the inferior spines of the Vertebrae Lumborum, and by small tendons from near the roots of their transverse processes.

Is inserted by as many long and thin tendons as there are ribs, each of which terminates into the third rib, where it begins to be curved, above its parting from the body of the muscle, only its uppermost and last tendon ends in the transverse process of the seventh Vertebra Colli.

Its use is to pull the ribs down.

N. B. From the upper part of the six or seven lower ribs arise so many small bundles of thin, tendinous and fleshy fibres, which, after a very short progress, terminate in the inner side of this

K 2 muscle.

The muscles of the Thorax.

muscle. Steno calls them Musculi ad Sacro-lumbum Accessorii.

CERVICALIS DESCENDENS Diemerbr. *

Origin. ARISES fleshy from the third, fourth, fifth and sixth transverse process of the Vertebrae Colli, and

Insertion. Is inserted into the third, fourth, fifth, sixth and seventh rib, between the Sacro-lumbalis and the Longissimus Dorsi.

Use. Its use is to draw the ribs upwards in the act of inspiration.

COSTARUM LEVATORES Stenon. †

Which I name Levatores Proprii, to distinguish them from the other muscles that perform the same office : they

Origin. ARISE tendinous and fleshy from the transverse processes of the Vertebrae of the back, whence being carried obliquely forwards, they soon terminate in the upper side of all the ribs, except the first.

Insertion.

Their

* Le transversaire grele, ou transversaire collateral du Col. Winsl.

† Les Sur-costaux. Winsl.

Their use is to lift up the ribs, and dilate the chest, which they do most effectually, because the processes of the Vertebræ serve as a Fulcimen to their motion.

C H A P. XXVI.

Of the muscles of the HEAD, that appear in the prone position of the body.

S P L E N I U S *

ARISES by a great many long and thin tendons from the five superior spinal processes of the Vertebræ of the back, tendinous and fleshy from the last of the neck, and entirely tendinous from the Ligamentum Colli; or rather the tendons of the two Splenii unite here inseparably, only about the second Vertebra of the neck they recede from

Origin.

K 3

one

* Le Splenius ou Mastoïdien postérieure. Winsl.

N. B. Albinus divides this muscle into two, viz. Splenius Capitis & Splenius Colli.

one another, so that part of the subjacent muscle may be seen.

Insertion. Is inserted by one tendon into the transverse process of the second Vertebra Colli; and by two, for the most part, into that of the first; and tendineo-carnous into the under and fore-part of the Processus mamillaris, from whence it is carried backwards on the Occiput.

Use. Its use is to bring the head backwards laterally; but when both act, to pull the head directly backwards.

In a dog it terminates in the transverse process of the first Vertebra Colli, and into the posterior and lateral part of the occipital bone. Backwards it is intimately conjoined with its fellow of the other side, from the sharp process of the last Vertebra Colli to the Occiput, from which commissure, or joining, there runs down a thin transparent membrane to all the Ligamentum Colli.

TRACHELO MASTOIDÆUS, seu CAPITIS
PAR TERTIUM, Fallop. *

ARISES from the transverse process of the first and second Vertebræ Dorſi, and from the three or four lowermost of the neck, by ſo many thin tendons, which uniting form a pretty thick fleſhy belly, that runs up under the Splenius, and

Origin.

Is inſerted into the middle of the backſide of the Proceſſus maſtoidæus by a thin tendon.

Inſertion.

Its uſe is to aſſiſt the Complexus.

Uſe.

N. B. This muſcle often receives a roundiſh fleſhy ſlip from the Longiſſimus Dorſi.

In a dog it is inſeparably united with the tendon of the Splenius, at its termination in the Occiput.

COMPLEXUS

* Le petit Complexus, ou Maſtoidien latéral.

COMPLEXUS *

Origin. ARISES tendinous and fleshy from the six or seven superior transverse processes of the Vertebrae of the back, and from all those of the neck, except that of the first, by so many distinct beginnings; in its ascent it adheres to the spinal process of the last Vertebra Colli, and to the ligament that runs from thence to the second Vertebra, where it leaves its fellow of the other side, and runs off obliquely forwards to its termination.

Insertion. Is inserted fleshy into the Os Occipitis, between the upper part of the Obliquus superior, and the edge of the protuberance, observable in the middle of that bone.

Use. If one muscle acts, the head is thereby pulled a little to one side; but if both act

* Le grand Complexus. Winsl.

N. B. A part of this muscle is sometimes found distinct from the rest, and called by Albinus, Biventer Cervicis.

act in concert, the head is extended, or drawn directly backwards.

N. B. The Complexus seems to derive some part of its origin from the oblique processes of the Vertebrae of the neck.

In a dog it arises from the four superior transverse processes of the back by so many thin and small tendons, as also from the five lower ones of the neck by so many different heads, not unlike the Digituli of the great serrated muscle, which uniting form a large fleshy belly, that terminates tendinous in the lateral part of the Occiput, near its ridge.

RECTUS MAJOR *

ARISES fleshy from one of the double spines of the second Vertebra of the neck, and grows broader in its ascent, which is not straight, but obliquely outwards, being as it were divided into two thin portions, the innermost of which

Origin.

Is inserted into the Occiput, near the Rectus lateralis; the other, which is the broadest, ends in the same bone under

Insertion.

* Rectus Capitis, posticus major. Albin.

der part of the Obliquus major, tendinous and fleshy.

Use. Its use is to extend, or pull the head backwards.

This in a dog is double ; the first, or Rectus major, comes from the lower part of this spinal process ; the second, which I call Rectus medius, proceeds from the upper part of the same spine.

RECTUS MINOR *

Origin. ARISES narrow from a little protuberance in the middle of the back part of the first Vertebra Colli, close by its fellow, and

Insertion. Is inserted pretty broad (its inner edge being only covered by the Rectus major) into the sides of a dimple in the Os Occipitis, near its great Foramen.

Use. Its use is to assist the Rectus major in nodding or bowing the head a little backwards.

OBLIQUUS

* Rectus Capitis, posticus minor. Albin.

O B L I Q U U S S U P E R I O R *

ARISES from the transverse process of the first Vertebra of the neck. Origin.

Is inserted tendinous and fleshy into the Os petrosum and Occipitale, between the back part of the Processus mammillaris and the Musculus complexus. Insertion.

It serves for the oblique or semicircular motion of the head. Use.

This in a dog is also double ; one muscle arises fleshy from the extremity of the transverse process of the first Vertebra Colli, the other springs from all the upper edge of the same process, and both seem to unite about their insertion into the Occiput.

O B L I Q U U S I N F E R I O R †

ARISES fleshy from the spinal process of the second Vertebra Colli, and from some part of the body of the same next the spine. Origin.

Is inserted into the transverse process of the first. Insertion.

Its

* Le petit Oblique. Winsl.

† Le grand Oblique. Winsl.

Use. Its use is to assist the former.

In a dog it arises from the edge of the long spine of the second Vertebra Colli.

C H A P. XXVII.

Of the muscles of the NECK, that lie on its back part.

S P I N A L I S †

Origin.

ARISES by a great many tendinous and fleshy fibres from the five superior transverse processes of the Vertebrae of the back; ascending obliquely under the Complexus.

Insertion.

Is inserted into the fifth, fourth, third and second spinal processes of the neck, by four small tendons.

Use.

Its use is to extend the neck, by drawing it directly backwards.

In a dog it much better deserves this name, because it accompanies all the spines of the neck,

† Les Vertebraux externes du Demi-epineux, ou Transversaire-epineux du Col. Win.

neck, arising from the top of the first spinal process of the back, and running straight to that of the second spondyle of the neck, being firmly fastened to the sides of all the intervening acute processes.

TRANSVERSALIS *

ARISES tendinous and fleshy, partly from the oblique processes of the four inferior Vertebrae of the neck, and partly from the space between them and the transverse ones, being only a continuation of the same series of muscular fibres that compose the muscles of the back, of the same name. Origin.

Is inserted near the root of the superior spines of the neck; yet the uppermost termination is not only into the spine of the second Vertebra, but also into the body of the same spondyle laterally. Insertion.

Its use is to move the neck directly backwards, if both act; and obliquely backwards, if one only acts. Use.

L

In

* Pars Multifidi Spinæ. Albin.

Les Vertebraux internes du Demi-épineux, ou Transversaire-épineux du Col. Win.

The muscles of the Neck.

In a dog the insertion of this muscle is into the bodies of the Vertebrae of the neck.

INTERSPINALES Cowp.

Origin. ARISE fleshy from the superior part of each double spinal process of the neck, except the uppermost, which comes from the body of the first Vertebra, and are

Insertion. Inserted into the inferior part of all the said spines.

Use. Their use is to bring these acute processes near each other.

INTERTRANSVERSALES Cowp.

The distance between the transverse processes of the Vertebrae of the neck, most of which are bifid or forked, is filled up with a fleshy substance, arising from the inferior, and ascending to its insertion at the superior process.

Origin.

Insertion.

Use. Their use is to approximate these transverse Apophyses.

INTER-

INTERVERTEBRALES *** †

They arise from the body of one Vertebra laterally, and are

Inserted after an oblique progress into the back part of the other Vertebra immediately above it. Insertion.

Their use is to draw the bodies of the Vertebra nearer one another, and a little to one side. Use.

N. B. The number of these little small muscles is very uncertain, because they vary in most subjects; the last pair, being the slenderest of all, are chiefly conspicuous upon the back part of the first and second, and second and third Vertebrae.

In a dog they are all larger than in man.

† Partes Multifidi Spinæ. Albin.

C H A P. XXVIII.

Of the muscles of the B A C K.

TH O' the muscles that lie upon the Vertebrae of the back and loins do appear, even in the opinion of the great Fallopius, to be only a confused mass, or indigested heap of tendinous and fleshy fibres, extremely intricate, and so variously interwoven one with another, that it seems very difficult, if possible, to separate them; yet, in my anatomical exercises, I always demonstrate them, having in all subjects found them regular and uniform, fairly and distinctly divided into eighteen muscles, nine on each side; one of which belongs to the Thorax, viz. the Sacro-lumbalis, already described; three to the back, and five to the loins. Galen and Mr. Duverney think it indifferent, either to reckon these muscles, which they call Spinales and Vertebrales, as one pair only, or to multiply their number according to that of the Vertebrae; but in
my

my judgment the last would breed a great deal of confusion, and the first shews but little of an artist.

L O N G I S S I M U S

The origin of this muscle is in common with that of the Sacro-lumbalis. Origin.

Is inserted into all the transverse processes of the back by a double tendon into each ; from its outside there go off several Fasciculi of fleshy fibres, interspersed with a few tendinous filaments, which are soon inserted into the lower edge of most of the ribs, not far from their tubercle. Insertion.

Its use is to extend the Vertebrae of the back, and so keep the trunk of the body erect. Use.

N. B. From the superior part of this muscle there runs up a round fleshy portion, * which becoming tendinous, unites with the carnosus part of the Partertium Fallopii, which I have called Trachelo-mastoidæus.

L 3

SEMI-

* An transversalis Cervicis. Albin. & le grand Transversaire du Col. Winsl.?

SEMISPINALIS *

Origin. ARISES from the transverse processes of the six or seven lowermost Vertebrae of the back by so many distinct tendons, which soon grow fleshy, and then becoming tendinous again, are

Insertion. Inserted tendinous into all the superior spinal processes of the back, and into the lowermost spine of the neck.

Use. Its use is to assist the following.

TRANSVERSALES DORSI INTERIORES †

Origin. ARISE tendinous and fleshy from the upper part of the transverse processes of the back; then growing all fleshy, they run over the next Vertebra, and are

Insertion. Inserted near the root of all its spinal Apophyses.

Use. If they all act on one side, they extend the back obliquely, or move it laterally;

* Les Vertebraux externes du Demi-épineux, ou Transversaire-épineux du Dos. Win.

† Pars Multifidi Spinæ. Albin.

Les Vertebraux internes du Demi-épineux, ou Transversaire-épineux du Dos. Winfl.

terally ; but if they work together, they extend the Vertebrae dorsales by pulling them backwards.

C H A P. XXIX.

Of the muscles of the LOINS.

THE Vertebrae of the loins are moved by five pair of muscles.

SPINALIS Cowp.

ARISES tendinous and fleshy from Origin.
the superior single spines of the Os sacrum, in common with the Sacro-lumbalis and Dorsi longissimus, and

Is inserted tendinous into all the spi- Insertion.
nal processes of the Vertebrae Lumborum.

Its use is to extend the aforesaid Vertebrae. Use.

TRANSVER-

TRANSVERSALIS LUMBORUM, vulgò
SACER, *

Origin. ARISES fleshy from the oblique processes of the Vertebrae of the loins, and

Insertion. Is inserted near the root of their spinal ones.

Use. Its use is to move the Vertebrae Lumborum after the same manner that the Transversales do those of the back.

QUADRATUS †

Origin. ARISES broad and tendineo-carnous from the posterior part of the spine of the Ilium.

Insertion. Is inserted into the transverse processes of all the Vertebrae Lumborum, except the last, into the last rib; and by a small tendon that creeps up under the Diaphragm into the last Vertebra of the back laterally.

N. B. From

* Le Transversaire-epineux de Lombes. Winsl.

Pars Multifidi Spinæ. Albin.

† Le Quarré, ou Lombaire externe. Winsl.

N. B. From the fourth, third, and sometimes the second transverse process, there arise so many small muscles which unite with this Quadratus on its inside, that respects the cavity of the Abdomen.

Its use is to move the loins to one side, and when both act together to bend the Vertebrae straight forwards. Use.

In a dog it arises from the spine of the Ilium internally, and ascending, adheres to all the transverse processes of the loins; then entering the cavity of the Thorax, it ends tendinous and fleshy in its tenth or ninth Vertebra, counting from above downwards.

PSOAS PARVUS Rioli.

ARISES fleshy from the upper Vertebrae of the loins laterally. Origin.

Is inserted by a long flat thin tendon into that part of the Os Pubis, where it joins the Ilium. Insertion.

Its use is to assist the Recti Abdominis in drawing the Os Pubis upwards, as in raising ourselves from a decumbent posture, as Mr. Cowper writes. It may also

The muscles of the Loins.

also serve to bend the loins forwards ; but then its beginning must be drawn from the Os Pubis, and its termination be fixed in their Vertebræ.

This in a human body is often missed, but never in a dog, arising from the bodies of the four lowermost Vertebræ Dorsi, and as many of the upper spondyles of the loins, by so many small tendons laterally, and fleshy from the middle of all the same Vertebræ laterally. It soon turns into a broad and thin tendon, expanded over the great Psoas.

INTERTRANSVERSALES ***

These lie between the transverse processes of the loins, arising from all the edge of one, and terminating into that of the other.

Use. Their use is to bring these Apophyses nearer each other.

It was in a dog that I first discovered these small muscles, and I have never since missed them in the human body.

C H A P. XXX.

Of the muscles of the HUMERUS,
or ARM.

THE Os Humeri, or shoulder-bone, is moved by nine muscles.

P E C T O R A L I S

ARISES fleshy from near half the anterior part of the Clavicula, and from the cartilaginous endings of the fifth and sixth ribs, where it always detaches a Fasciculus or two of fleshy fibres, which run down upon the membrane that covers the Musculus Abdominis externus, and is described very accurately by R. Columbus; besides, it derives another origin from almost all the length of the Sternum by a great many short and small tendons, which plainly decussate those on the other side. Origin.

Is inserted by two strong and broad tendons, which cross one another, at the upper and inner part of the Os Humeri, between the Deltoides and Biceps. Insertion.

Its

Use,

Its use is to move the arm upwards.

N. B. Its superior tendon gives rise to the Involucrum, or tendinous ligament that binds in one of the heads of the Biceps.

In a dog the fibres of this muscle run in three different directions, and may be easily divided into three muscles.

The largest arises by an acute fleshy beginning from the Cartilago ensiformis, and from almost all the Sternum, and is inserted by a short and strong tendon into a protuberance in the head of the Os Humeri, and by a membranous tendon into the same bone lower down.

The second muscle lies on the outside of this, arising from near the extremity of the Cartilago ensiformis, and ascending, is partly inserted with the former, and partly runs down upon the muscles lying on the inside of the Humerus.

The third, which from its position deserves the name of Transversalis, arises from the upper part of the breast, and crossing over the first, terminates below it, by a strong and broad

broad tendon, all along the fore part of the Os Humeri externally.

DELTOIDES

ARISES fleshy from all the posterior and external part of the clavicle that the Pectoralis does not possess, tendinous and fleshy from the lower margin of the fore part of the Spina Scapulæ, and intirely tendinous from the posterior part of the same.

Origin.

Is inserted tendinous and fleshy at a rough protuberance in the fore part of the arm about its middle, the fibres of its Apex or point being intermixed with some part of the Brachiæus internus.

Insertion.

Its use is to pull the arm directly upwards, and that either somewhat forwards or backwards, according to the different direction of its fibres.

Use.

In a dog it arises tendineo-membranous from almost all the spine of the Scapula; that part of it which springs from the Acromion seems to be distinct from its other origin, but yet cannot be divided without violence; its action is all upwards and outwards, be-

M

cause

The muscles of the Arm.

cause it has no beginning from the Clavicle, which is wanting, to direct it inwards.

SUPRASPINATUS

Origin. ARISES fleshy from all the Basis Scapulæ that is above its spine, as also from its spine and upper Costa.

Insertion. Is inserted tendinous into that part of the protuberance on the head of the Os Humeri that is next the canal of the Biceps.

Use. Its use is to lift or move the arm upwards.

INFRASPINATUS

Origin. ARISES fleshy from all that part of the Basis Scapulæ that is between its spine and its lower angle, from the spine as far as its Cervix, and from the edge of all that Fossa that runs above its inferior Costa.

Insertion. Is inserted by a thick and short tendon into the upper part of a rough and flattish protuberance on the head of the Os Humeri.

Use. Its use is to pull the arm directly backwards.

N. B. 1. On

N. B. 1. On the inside of this muscle one may observe two or three large tendons run along its fleshy substance.

2. This and the former are both covered with a tendinous membrane, which not only strengthens their actions, but also keeps them from swelling too much outwardly in acting.

In a dog, through its middle lengthways, there runs a tendon from which the fleshy Fibrillæ run off on each side, like the Stamina of a feather.

TERES MINOR

ARISES fleshy from all the round edge of the inferior Costa Scapulæ, being in all subjects, that ever I dissected, distinguished from the Infraspinatus by a very considerable membrane. Origin.

Is inserted tendinous a little below the termination of the last named muscle, and fleshy a little lower upon the neck of the Os Humeri. Insertion.

Its use is to assist the bigger round muscle, in bringing the arm backwards. Use.

The muscles of the Arm.

In a dog it arises by a thin tendon, which closely adheres to the Infraspinatus from the middle of the lower edge of the Scapula, and turning into a round fleshy belly, it passes obliquely over the head of the Longus to its tendinous insertion,

TERES MAJOR

Origin.

ARISES fleshy from the inferior angle of the Scapula, and from all that portion of its lower rib, or Costa, that is rough and thicker than the rest, its fleshy fibres being continued over part of the Infraspinatus, to which they firmly adhere.

Insertion.

Is inserted by a short, broad and thin tendon, at a roughness a little below the head of the Os Humeri internally; and though it is very closely joined to the tendon of the Latissimus Dorsi, yet they part before their insertions into that bone.

Use.

Its use is to move the arm backwards and downwards.

LATIS-

LATISSIMUS DORSI

ARISES by a thin tendon from the Origin.
 posterior part of the spine of the Ilium,
 from the superior spines of the Os sacrum,
 from all those of the Vertebrae Lumborum,
 and from seven or eight of the lowermost ones of the back, below
 the Rhomboides; besides, it has another
 origin tendinous and fleshy from the
 extremity of the bony part of the four
 or five lowermost ribs, near their carti-
 lages, by so many distinct slips. I ne-
 ver found it adhere to the inferior angle
 of the Scapula by any carnosus fibres,
 it being only connected by membranes
 to the Teres major and Rhomboides.

Is inserted by a strong and thin ten- Insertion.
 don upon the edge of the channel of the
 Biceps, near the termination of the pec-
 toral muscle.

Its use is to pull the arm backwards Use.
 and downwards.

N. B. In some muscular dissections
 since this specimen was made publick,

The muscles of the Arm.

I observed a small bundle of fleshy fibres to arise from the outside of the Basis Scapulæ near its inferior angle, and adhering to the upper part of this muscle in its progress along the Costa inferior of the shoulder-blade, to be lost into the same, just where it begins to grow tendinous. That this is so in all bodies I am apt to believe, though before this I had never remarked it.

In a dog, when this muscle arrives at the Teres major, it parts with a thin fleshy production, which running down upon the Longus Cubiti, terminates tendinous into the Ancon. A little before its insertion it receives the Membrana carnosæ, which fleshy pannicle or membrane, is a thin carnosous expansion which covers the muscles that lie on the upper part of the Os Femoris, the Ilium and Sacrum, the Abdomen, Dorsum, and most part of the Thorax; as it comes near the Axilla, it narrows and grows thicker, and then joins in with this muscle, where it terminates. By the contraction of its fibres the skin is wrinkled, and the hairs on the back made to stand erect when this animal is angry or afraid.

CORACO-

CORACO-BRACHIALIS

ARISES partly tendinous, and partly fleshy, from the under side of the Processus Coracoides Scapulæ near its tip, adhering in its descent to one of the heads of the Biceps. Origin.

Is inserted tendineo-carnous about the middle of the internal part of the Os Humeri, sending down a thin tendinous expansion to the inner condyle of that bone. Insertion.

Its use is to lift or move the arm upwards. Through this muscle passeth a large branch from the fourth pair of nerves of the neck, which constitutes the first Brachial pair. Use.

In a dog it is a small thin muscle, arising from a protuberance in the upper part of the superior Costa Scapulæ by a very slender tendon, which passing over the head of the Humerus, grows fleshy, and is so inserted into the inside of that bone, about an inch or more below its neck.

SUBSCA-

SUBSCAPULARIS

Origin. **ARISES** fleshy from all the basis of the Scapula, from all its superior Costa, and about one half of its inferior; besides, it has two tendinous beginnings arising from two little protuberances, seated in the hollow part of this bone near its basis, at two or three inches distance one from another, which tendons are continued through the fleshy part of the muscle to its ending, being subdivided into many more as it passes over the juncture.

Insertion. Is inserted tendinous into the upper edge of the protuberance, on the head of the Os Humeri laterally.

Use. Its use is to bring the arm close to the ribs.

The tendon of this, with that of the Infra and Supra-spinatus, adheres firmly to the membrane that involves the articulation of the Humerus with the Scapula; but they may be all easily divided one from another, without cutting their tendinous fibres.

In

In a dog it only fills up three parts of the concave or hollow part of the Scapula, the *Serratus Anticus major* possessing the rest.

Besides the nine pair of muscles above described, a dog has two more: the first I name

Levator Humeri proprius. It arises membranous and fleshy from all the space between the tendinous ending of the *Mastoidæus*, and the ridge of the *Occiput*, and from the upper part of the *Ligamentum Colli*; this large beginning contracts and grows narrower, as it runs obliquely down the neck, closely adhering to some part of the *Levator Scapulæ major*, and passing over the articulation of the *Humerus*, goes straight down to its insertion in the fore part of the same bone, near the flexure of the *Cubit*, between the *Biceps* and *Brachiæus internus*. The second I call

Musculus ad Levatorem accessorius. It arises from the *Os Occipitis*, near the insertion of the thick tendon of the *Mastoidæus* and becoming a thick fleshy muscle, runs down to its insertion into the *Levator proprius*, being there of an equal breadth with it. Just above the head of the *Os Humeri*, near the termination

The muscles of the Cubit.

termination of this muscle there is placed a small falcated cartilaginous bone, tied to the Scapula and top of the Sternum by two small ligaments, which seem to be an imperfect Clavicle.

In Cats this muscle is inserted into the whole length of their Clavicula, which it serves to lift up. But in this animal the use of this accessory muscle seems calculated for the assistance of the Levator, which serves to raise the Os Humeri upwards, and at the same time to turn it a little outwards, whereby the fore feet are kept from interfering or cutting one another in running or leaping.

C H A P. XXXI.

Of the muscles of the C U B I T.

THE Cubit, or fore-arm, reaching from the extremity of the Os Humeri to the wrist, and composed of two bones, viz. the Ulna and Radius, has five muscles.

BICEPS

BICEPS INTERNUS †

Its first and outermost head arises tendinous from the Cervix-scapulæ, near the upper and narrow edge of its cavity, called Acetabulum, which in its descent is inclosed in a channel in the head of the Os Humeri by a membranous ligament that proceeds from the pectoral muscle. The second, or innermost, arises tendinous and fleshy from the Processus Coracoides Scapulæ. A little below the middle of the fore part of the arm these heads unite.

Is inserted by a strong and thick tendon into all the Tubercle on the upper end of the Radius internally.

Its use is to bend the Cubit.

N. B. About the flexure of the Cubit, or bending of the elbow, where it begins to grow tendinous, it sends off an Aponeurosis, first taken notice of by that celebrated anatomist, Mr. Cowper, vid. Myotom. reformat. page 147. which covers

† Biceps Brachii. Albin.

Le Coraco-radial, ou Biceps. Winsl.

The muscles of the Cubit.

covers all the muscles on the inside of the Cubit. Its fibres decussate those of another tendinous membrane that lies under it.

In a dog it consists but of one head, arising from the Cervix-scapulae; and on that account I call it Flectens Cubitum anterior, because it lies above the following muscle.

BRACHIALIS INTERNUS *

Origin. ARISES fleshy from the middle of the Os Humeri at each side of the termination of the Deltoides muscle, filling up all the space between the two edges of this bone.

Insertion. Is inserted by a very strong tendon into the upper and fore part of the Ulna.

Use. Its use is to assist the former.

In a dog it arises broad and fleshy from the back part of the Humerus, just under its neck; from thence it runs obliquely to the fore part of that bone, and then proceeds as in man.

BICEPS

* Le Brachial. Winsl.

BICEPS EXTERNUS *

The first head, called Longus, † arises broad and tendinous from the *Costa Scapulæ inferior*, and a little fleshy from its neck. The second head, called Brevis ‖, arises by an acute, tendinous and fleshy beginning from the *Os Humeri*, about an inch below its head. Upon the back side of the *Humerus*, these two, with the following muscle, join their fibres, and are

Origin. Inserted into the upper and external process of the *Ulna*, called *Ancon*. Insertion.

Its use is to extend the Cubit. Use.

BRACHIALIS EXTERNUS §

ARISES by an acute fleshy beginning from the *Os Humeri*, a little higher than the insertion of the *Teres major*. About the

* N. B. The two heads of this, and the following muscle, are described by *Albinus*, under the name of *Triceps Brachii*.

† Le grand *Anconé*.

‖ L'*Anconé externe*.

§ L'*Anconé interne*.

the middle of the arm it passes under the Longus, with which it mixes fibres to the external ridge of that bone, being continued down the same to the condyle of that side, where some of its fibres join inseparably with the Angonæus; the rest ending in the Ancon, with those of the Longus and Brevis.

N. B. The Brachiaëus externus, and the Biceps externus, or Gemellus, make but one single muscle with three heads, to which I give the name of Triceps Cubiti, or Extensor Cubiti magnus Triplici principio natus.

ANGONÆUS, vel CUBITALIS, Riol. *

Origin.

ARISES by a round and short tendon from the back part of the external condyle of the Os Humeri; this soon grows fleshy, and is so intangled with part of the Brachiaëus externus, that there can be no separating them without violence.

Insertion.

Is inserted fleshy and thin into the lateral part of the Ulna, a few inches below the Olecranon.

Its

* Anconeus. Albin.

Le petit Anconé. Winsl.

Its use is to assist in extending the Ulna.
Cubitus.

In a dog the extension of the cubit, or Ulna, is performed by the joint action of five very distinct muscles.

Extensor primus, or longus, arises as in man, and becomes a very thick and fleshy belly, but gradually contracting, grows tendinous, and is so inserted into the upper and external part of that process of the Ulna, called Ancon in human bodies.

Extensor secundus, or Brevis, arises from the superior and back part of the Humerus, just under its smooth head, and descending under the Longus, turns into a small tendon, which passing through a Sulcus in the extremity of the Ulna, ends a little below the Longus.

Extensor tertius, which is something analogous to that head of the Triceps Cubiti, called Brachæus externus, is a pretty thick fleshy muscle, arising from the upper and posterior part of the Humerus, at a protuberance near the ending of the Teres minor; it ends in the outside of the Ancon.

The muscles of the Hand.

Extensor quartus, vel Anconæus, fills up a cavity or hollow between the heads of the Ulna and Radius, arising and terminating as in man.

Extensor quintus arises by a thin tendon from the inside of that protuberance, into which the Supra-spinatus of the Scapula is inserted, and passing under the tendon of the Teres major, becomes fleshy, and ends tendinous on the inside of the Ancon.

C H A P. XXXII.

Of the muscles of the PALM of the HAND.

THE muscles of the Palma, or Vola Manûs, are two.

PALMARIS LONGUS *

Origin.

ARISES tendinous from the internal protuberance of the Os Humeri; it soon becomes fleshy, and within a few inches becomes tendinous again. About the
Ligamentum

* Le Cubital gresle. Winsl.

Ligamentum Carpi annulare it expands itself into a broad disgregated tendon, (giving some filaments to the Ligamentum annulare, to the Abductor Pollicis, and to the Flexor of the first internode) between which and the skin there lies a great deal of fat. Near the lower end of the metacarpal bones it is decussated by a great many tendinous straight fibres, which run upon it from one side to the other.

Its insertion is by two small tendons into the sides of the cartilage that lies upon the articulation of each finger, with the Ossa Metacarpi. Insertion.

Its use is to contract the palm of the hand, and so assist it to grasp any thing closely. Use.

N. B. This muscle does sometimes spring from the Ligamentum annulare.

It is wanting in a dog.

PALMARIS BREVIS, Joan. Bapt. Cannan. vel CARO QUADRATA *

Origin.

ARISES by a membrane-like tendon from the superior and external part of the Os Metacarpi minimi Digiti; whence ascending obliquely, and adhering to the fourth bone of the Carpus that lies upon the third, it grows fleshy in two or three places, being separated by intervening membranes; and passing under the Palmaris longus,

Insertion.

Is inserted tendinous into the Ligamentum annulare, and into that bone of the Carpus that articulates with the thumb. The upper part of this tendon adheres to the Abductor Pollicis, and its lower part to the Flexor secundi Internodii ejusdem.

Use.

Its use is to make the palm of the hand hollow, by drawing the ball of the thumb towards the Os Metacarpi, that sustains the little finger, and so forms what they call Diogenes's cup.

This is wanting in a dog.

C H A P.

* Le Palmaire cutané. Winfl.

C H A P. XXXIII.

Of the muscles of the WRIST.

THE Carpus, or Wrist, composed of eight small bones, situate between the extremities of the Ulna and Radius, and the upper part of the metacarpal bones, is furnished with four muscles, and yet all of them, as Vesslingius remarks, terminate in the bones of the Metacarpus.

FLEXOR CARPI RADIALIS *

ARISES tendinous and fleshy from the Origin.
internal protuberance of the Os Humeri,
and from the rough edge of all the
anterior process of the Ulna, where it
firmly adheres to the Pronator Radii
Teres.

Is inserted by a flat tendon into the Insertion.
fore and upper part of the Os Metacarpi,
that joins with the fore-finger, having
run through a Sinus, or cavity, in the
bone of the wrist, that articulates with
the

* Radialis internus. Albin. & Winsl.

The muscles of the Wrist.

the thumb, being there bound in by a membrane which parts it from the tendons of the other muscles, which with it pass under the Ligamentum annulare.

Use. Its use is to bend the wrist, together with the hand, and when it acts in conjunction with the Radialis extensor, the wrist is moved laterally towards the Radius.

FLEXOR CARPI ULNARIS *

Origin. ARISES tendinous from the same Tubercle of the arm-bone. It has likewise a narrow fleshy beginning from the side of the Ancon, between which and its tendinous origin a large branch of the brachial nerve, called Ramus Ulnaris, passes to the Cubit. In its descent, according to the length of the Ulna, it is covered by a tendinous expansion in common with the other muscles that lie on the outside of the Cubit; and by this only it seems to adhere to the external edge of that bone.

Is

* Ulnaris internus. Winsl.

Le Cubital interne. Winsl.

Is inserted by a short and strong tendon into the fourth bone of the first rank of the Carpus, placed upon the third ; at some distance from its termination, there goes a ligament from this little bone to the Os Metacarpi minimi Digiti, which some reckon to be a continuation only of the tendon of this muscle.

Insertion.

Its use is to assist the former, in bending the Carpus.

Use.

In a dog it makes two distinct muscles ; the largest arises tendinous from the inner Tubercle of the Humerus, near the edge of the Sinus, that receives the Ulna ; is inserted into the bone of the Carpus that stands out of rank. The lesser has a thin fleshy origin continued from the Ancon, about an inch down the inside of the Ulna ; and terminates into the same bone with the bigger, at some distance from it.

EXTENSOR CARPI RADIALIS

Makes two very distinct muscles ; the first which I call Longus, or superior *,
arises

* Radialis externus longior. Albin.

Le Radial externe premiere. Winss.

The muscles of the Wrist.

Origin. arises broad, thin, and fleshy, from the lower part of the external ridge of the Os Humeri, between the Supinator Radii longus and the Condyle. The other, which I name Brevis, or inferior †, springs tendineo-carnous from the same protuberance of the Os Humeri: they both lie on the outside of the Radius, the last continuing fleshy lower down than the first. The Longus

Insertion. Is inserted into the upper part of the bone of the Metacarpus, that sustains the fore-finger: the Brevis into that which stays the middle-finger; both being tendinous.

Use. Its use is to extend the Wrist, and bring the hand backwards.

In a dog it may properly enough be called Bicornis; because it cannot, without great violence, be parted at its origin.

EXTENSOR

† Radialis externus brevior.

Le Radial externe second.

EXTENSOR CARPI ULNARIS *

ARISES tendinous from the external Origin.
protuberance of the Os Humeri, between the Anconæus and Extensor Digitorum communis, and fleshy from the upper part of the Cubit laterally, descending according to the length of this bone, its round tendon being inclosed in a channel dug in its extremity ; from which to its termination, it passes thro' a ligament like a sheath.

Is inserted tendinous into the superior Insertion.
part of the metacarpal bone, that supports the little finger.

Its use is to assist the muscle last described. Use.

N. B. It is covered with a tendinous expansion, continued down from some of the tendons of the extensors of the Cubit, which Aponeurosis is finely expanded over all the muscles that lie on the outside of the fore-arm, as that of the Biceps is on those of its inside.

When

* Ulnaris externus. Albin.

Le Cubital externe. Winsl.

The muscles of the four Fingers.

When this and the Flexor Ulnaris act at once, the wrist, with the hand, is moved sideways towards the Ulna.

In a dog it bestows a tendon on the bone of the Carpus, that stands upon another, on which account, this pulls the Carpus a little outwards in extension, which is of very great advantage to this animal in running.

C H A P. XXXIV.

Of the muscles of the FOUR FINGERS.

THE muscles of the four fingers I divide into common and proper : the common are such as belong to all the four fingers, being thirteen in number, viz. one Extensor, two Flexors; four Lumbricales, and six Interossei.

PERFORATUS *

Origin.

ARISES tendineo-carnous from the inner protuberance of the Os Humeri, tendinous from the anterior process of the

* Sublimis. Albin.

The muscles of the four Fingers.

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the Ulna, near the edge of its lunated cavity, and tendineo-membranous from about the middle of the fore part of the Radius ; being so continued from near the beginning of the Flexor pollicis magnus, three or four inches down that bone : its fleshy belly divides into four tendons, before it passes under the ligament of the wrist, and these are

Inserted into the superior part of the second bone of each finger, that which goes to the little one, being by far the smallest. In the palm of the hand they are united to one another, and to those of the muscle next in order by soft slimy membranes ; about the middle of the first joint they are divided for the free passage of the tendons of the Perforans, and where they unite again one may observe a very fair decussation of some of the tendinous filaments of one side running across to the other ; then subdividing, as Mr. Cowper has well remarked, they march for some space upon the edges of the bones before

O

they

Insertion.

The muscles of the four Fingers.

they are lost upon their upper part, as I have in all subjects observed.

Use. Its use is to bend the second joint of the fingers.

In a dog the tendons of this muscle are not slit for the passing of those of the Perforans, but they form a round case as long as the first joint, which covers those on all sides in their passage ; having only a little hole of an oval figure on its outside. They end without any subdivision.

P E R F O R A N S *

Origin.

ARISES fleshy from all the upper part of the Ulna laterally, being continued down its external ridge, or spine, to its middle, from the inner edge and fore part of that bone, and from one half of the ligament that joins it to the Radius ; the thick, superior, fleshy part of this muscle is firmly kept in by the Fascia tendinosa that covers the muscles lying on the outside of the fore-arm, as has been already remarked : splitting into four tendons a little before it passes the transverse

* Profundus. Albin.

The muscles of the four Fingers.

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transverse ligament of the Carpus, they run through the fissures, or slits, made in the former tendons, being continued farther on to their insertion into the third bone of all the four fingers.

Its use is to bend the last joint of the fingers. Use.

In a dog it arises by three distinct fleshy originations; the outermost proceeds from the upper and middle part of the Radius, the innermost arises from the upper part of the Ulna, being farther continued down most of its edge: both these heads are very small, but the middlemost makes a very large big bellied muscle, seemingly divided into two or three, which springs from the internal protuberance of the Os Humeri. Those three unite and form a thick and broad tendon, which soon splits into five small ones; four terminating as in man, and the fifth ending in the thumb.

LUMBRICALES

These four muscles arise thin and fleshy from the outside of the tendons of the Flexor profundus, a little below

Origin.

The muscles of the four Fingers.

the Ligamentum transversale ; to which, in their descent, they adhere for some space, but parting from thence they grow round and pretty large. They terminate by long and slender tendons, which run over the transverse cartilaginous ligament, placed upon the articulation of the first bone of the fingers, with those of the Metacarpus, into the broad tendons of the Interossei, about the middle of the first Internode next the thumb laterally.

Use. They are said to assist in bending the first joint of the fingers.

EXTENSOR DIGITORUM COMMUNIS

Origin. ARISES by an acute tendon from the outward extuberance of the Os Humeri between the Extensors of the Carpus, closely adhering to the Supinator Radii brevis. Before it passes under the Ligamentum Carpi, it splits into four flat tendons, each of which may be divided into a great many smaller. It is chiefly about the extremity of the metacarpal bones that they remit tendinous filaments

ments to each other. These tendons are

Inserted into the upper part of the second bone of each of the four fingers, being tacked to the first joint in their way thither. Insertion.

Its use is to extend the first and second joint of the fingers. Use.

In a dog it runs to the last bone of each toe, between the two ligaments that go from the second Internode to the third. The use of these ligaments is to draw the last joint backwards and upwards, and keep it suspended, that the extending tendon may not always be upon the stretch, as shall be more fully explained in another place.

INTEROSSEI

Are well divided into external and internal. The external fill up all the space that the bones of the Metacarpus leave towards the back of the hand: the internal, which, properly speaking, deserve not the appellation of Interossei, arise from the fore part of the metacarpal bones that respects the palm of the

O 3

hand,

The muscles of the four Fingers.

hand, being only conspicuous in the Vola, and not in the Dorsum Manûs; whereas the external are apparent in both.

Origin.

The first * interosseous muscle arises tendinous and fleshy from all the fore part of the Os Metacarpi Indicis, between its head and condyle; as also from the upper part of the Os Metacarpi medii Digiti. This, which is the first of the internal, belongs to the side of the fore finger, next the middle one.

Origin.

The second, † which is the first of the external, arises from most of the outside of the Os Metacarpi medii Digiti, and a little tendinous from its fore part, just under its head, being conspicuous both towards the back and palm of the hand. This runs along the side of the middle finger next the Index.

Origin.

The third, ‡ which is the second of the external, and runs along the other side

* Posterior Indicis. Albin.

† Prior Medii. Albin.

‡ Posterior Medii. Albin.

The muscles of the four Fingers.

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side of the middle finger, fills up all the space between its metacarpal bone and that which supports the ring finger; from both which it springs, as also from some of the fore part of this bone laterally, being likewise very conspicuous in the palm of the hand.

The fourth, * which is the second of the internal, belongs to the side of the ring finger, next the middle one, arising from all the fore part of its metacarpal bone below its head. Origin.

The fifth, † which is the third of the external, runs along the other side of this finger, and fills up all the space between the metacarpal bone of this and that of the little finger, on the back of the hand, arising from both those bones. Origin.

The sixth, || or third of the internal, runs along the side of the little finger, next the ring finger, and arises tendinous Origin.

* Prior Annularis. Albin.

† Posterior Annularis. Albin.

§ Interosseus Auricularis. Albin.

The muscles of the four Fingers.

nous and fleshy from the anterior edge of all its metacarpal bone.

All these muscles of both kinds pass under the transverse cartilaginous ligament, already described, and then each of their fleshy bellies forms two tendons ; one is soon

Insertion. Inserted into the upper part of the first Internode laterally ; the other is dilated very broad, so as to cover most of the first joint adhering to the tendon of the Extensor ; then, narrowing a little as it approaches the upper part of the second internode, where the last named muscle ends, it runs obliquely along that bone to its termination at the superior part of the last joint of the finger, having first joined with its fellow of the other side.

Use. When the long tendons act, they extend the last Internode, and so supply what was wanting in the Extensor magnus ; and when the short ones are in action, the fingers are moved laterally, i. e. they are either brought nearer, or drawn further from the thumb.

In

The muscles of the four Fingers.

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In a dog, something analogous to these, I observe six muscles; four of which are large, placed not between, but in the hollow of the metacarpal bones, and run straight down: the other two are very small, and run oblique. The large arise tendinous and fleshy from the superior part of the metacarpal bones adhering to the same in their descent: at the Os sesamoidæum of the first joint, each divides into two tendons, and running obliquely along the sides of the finger, or paw, they unite inseparably with the tendon of the Extensor, near the lower part of the first bone of each fore toe.

The first of the two little ones belongs to the fore toe, or Index; it arises from the upper part of the Os Metacarpi medii Digiti, and descending obliquely grows tendinous about the first joint, and terminates near the middle of this bone laterally internally.

The second arises from the Os Metacarpi of the third fore toe, or finger, and after an oblique progress, ends in the inside of the first bone of the little fore toe. Their use is to bring those two toes nearer the middle ones.

The

The proper muscles of the fingers are such as belong either to the fore or little finger.

C H A P. XXXV.

Of the muscles of the F O R E -
F I N G E R.

THE fore-finger, or Index, has three muscles.

EXTENSOR SECUNDI INTERNODII
INDICIS PROPRIUS, vulgò INDICATOR. *

Origin. ARISES by an acute fleshy beginning from the middle of the Ulna, immediately below the Extensores Pollicis, turning tendinous, it passes under the same annular ligament with the Extensor communis.

Insertion. Is inserted at the upper part of the second joint, on the inside of the Extensor magnus.

Its

* L'Extenseur propre de l'Index. Winsl.

The muscles of the Fore-Finger. 155

Its use is to extend the fore-finger a little obliquely. Use,

In a dog it is inserted into the last joint.

EXTENSOR TERTII INTERNODII
INDICIS. *

ARISES fleshy from all the outside of the Os Metacarpi, that sustains the Index. Origin.

Is inserted by two tendons, like the Interossei, i. e. by a short one into the upper part of its first bone laterally; and by a broad and long one into the upper part of its last bone, being united with the Musculus Interosseus primus. Insertion.

The short tendon draws the Index from the rest, and so may retain the appellation of Abductor; the long tendon assists this Interosseus in extending the third or last joint of the fore-finger. Use.

This muscle is wanting in a dog.

* Interosseus prior Indicis. Albin.

ABDUCTOR

ABDUCTOR *

Origin. ARISES broad and fleshy from the superior part and outside of the first bone of the thumb.

Insertion. Is inserted by a short tendon into the upper part of the first bone of the forefinger, laterally, next the thumb.

Use. Its use is to bring the Index towards the thumb, by drawing it from the middle finger ; whence, in respect of THIS, it may be stiled Adductor, and in respect of THAT Abductor.

This is wanting in a dog.

C H A P. XXXVI.

Of the muscles of the LITTLE-FINGER.

THE *Digitus Auricularis* has three proper muscles, and one common to it with the *Extensor Communis*, reckoned by some a proper muscle, and named

EXTENSOR

* *Adductor Pollicis.* Cowp.

Le Demi-interosseux de l'Index. Winsl.

EXTENSOR MINIMI DIGITI.

It is said to arise from the external protuberance of the Humerus, and from the upper part of the Ulna ; but, in my opinion, it ought not to be reckoned a muscle distinct from the Extensor communis, because it cannot be separated from it without cutting. Truth it is, it passes its tendon under a Ligamentum annulare, distinct from the other three tendons, but that is far from being sufficient to constitute a particular muscle.

N. B. It is commonly inserted by two tendons ; besides which the little finger has often another tendon from the Extensor communis.

All that prominent, soft, fleshy mass, that lies on the Os Metacarpi minimi Digiti, in the palm of the hand, is called in Greek, Hypothenar, in as much as it is placed below that part called Thenar. This I find always easily divisible into three muscles, viz.

P

EXTENSOR

EXTENSOR TERTII INTERNODII
MINIMI DIGITI *

Origin.

ARISES fleshy, mixed with some tendinous fibres from the bone of the Carpus, that stands upon the third of the first rank, as also from the ligament that ties that bone to the Os Metacarpi of the little finger.

Insertion.

Is inserted after the manner of the Interossei, i. e. by a short tendon into the upper part of the first bone of this finger laterally, and by a long tendon into the upper part of the last bone, having joined the Interosseus of the other side.

Use.

Its use is to help to extend this last joint, and to draw the finger from the rest when the short one only acts.

* Abductor minimi Digiti. Albin.
Le petit Hypothenar. Winsl.

ABDUCTOR

ABDUCTOR MINIMI DIGITI,
HYPOTHENAR Riol. *

ARISES fleshy from the thin protuberating part of the eighth bone of the wrist. Origin.

Is inserted by a pretty long and round tendon, on the inside of the short tendon of the above described muscle, near the upper part of the first bone of this finger. Insertion.

It serves not only to abduce the little finger from the rest, but also to bend it a little. Use.

FLEXOR PRIMI INTERNODII MINIMI
DIGITI †

ARISES tendinous and fleshy from the inferior part of the thin edge of the eighth bone of the wrist, and from all the inner side of the Os Metacarpi, that sustains this finger: at the condyle or Origin.

P 2 round

* Flexor parvus minimi Digiti. Albin.

† Adductor Ossis Metacarpi minimi Digiti. Albin.

Le Metacarpien. Winsl.

The muscles of the Thumb.

round part of this bone it divides into two tendons, which are inserted on each side of the upper part of the first bone of the finger.

Use.

Its use is to assist in bending the first internode of the little finger.

These three are wanting in a dog.

C H A P. XXXVII.

Of the muscles of the THUMB.

THE Thumb, or Pollex Manûs, which is equal in strength to all the rest of the fingers, opposite to which it is placed like another hand, is moved by nine muscles.

FLEXOR TERTII INTERNODII *

Origin.

ARISES by an acute fleshy beginning from the upper part of the Radius, a little below the termination of the Biceps, which origin is continued down for some space on the fore part of this bone,

* Flexor longus Pollicis Manus. Albin. & Winsl.

bone, in a double order of short fleshy fibres, ending in the tendon that runs in their middle.

Is inserted into the third or last bone of the thumb, having passed its tendon under the several annular ligaments that come from one side of its second bone to the other side. Insertion.

Its use is to bend this last joint. Use.

FLEXOR SECUNDI INTERNODII *

This may be divided into two distinct muscles, between which the tendon of the former muscle runs. The outermost arises from the bone of the Carpus, with which the thumb is joined. The innermost arises from part of the same bone, and also from the upper part of the Os Metacarpi Indicis, and medii Digiti, in common with the Adductor. They are both Origin.

Inserted into the two Ossa Sesamoidæa of the second joint of the thumb. Insertion.

P 3

Their

* Flexor brevis Pollicis Manus. Albin.

The muscles of the Thumb.

Use. Their use is to bend this joint or internode.

FLEXOR PRIMI INTERNODII *

Origin. ARISES fleshy from the Ligamentum transversale, and the bone of the Carpus that articulates with the thumb, lying under the Abductor.

Insertion. Is inserted fleshy into all the inside of the first bone of the thumb.

Its use is to bend this joint.

EXTENSOR PRIMI INTERNODII †

Origin. ARISES fleshy from the upper and external part of the Ulna, immediately below the termination of the Anconæus, from the back part of the Radius, below its Supinator Brevis, and from the membranous ligament that ties these two bones together.

Insertion. Is inserted always by two, and very often by three distinct tendons; the first is a large and round tendon, which seems to be a bundle of a great many small

* Opponens Pollicis. Albin.

† Abductor longus Pollicis. Albin.

small ones, terminating into the upper part of the first bone of the thumb; the second tendon is lost in the fleshy beginning of the Abductor Pollicis; and the third, which in some subjects is wanting, is implanted into that bone of the Carpus that articulates with the thumb.

Its use is to extend the first bone of the Pollex.

EXTENSOR SECUNDI INTERNODII *

ARISES fleshy from the back part of the Radius, about the middle of the fleshy belly of the former, unto which in its descent it firmly adheres; it has a second origin from some part of the membranous ligament.

Is inserted into the upper part of the second bone of the thumb.

Its use is to extend the second inter-node.

EXTENSOR

* Extensor minor Pollicis. Albin.

N. B. Winslow describes this and the preceding muscle as one, under the name of Le premier Extenseur du Pouce.

EXTENSOR TERTII INTERNODII *

Origin. ARISES by an acute, tendinous and fleshy beginning from the Ulna, a little below the origin of the first Extensor, as likewise from the ligament that connects the two bones. Its tendon runs in a proper channel at the extremity of the Radius.

Insertion. Is inserted into the third and last bone of the Pollex.

Use. Its use is to extend the last joint, in bringing it backwards.

ABDUCTOR, THENAR Riol. †

Origin. ARISES by a broad, tendinous and fleshy beginning from the transverse ligament of the Carpus, and from one of its bones that articulates with the thumb.

Insertion. Is inserted tendinous into the second joint of the Pollex Digitorum Manûs.

Its

* Extensor major Pollicis. Albin.

Le second Extenseur du Pouce. Winsl.

† Abductor brevis Pollicis Manus. Albin.

Its use is to draw the thumb from the fingers. Use.

ADDUCTOR AD INDICEM,
ANTITHENAR RIOL.

ARISES from the outside of the upper part of the Os Metacarpi Indicis. Origin.

Is inserted into the first joint of the thumb, sending off a thin tendon, which runs along with the Extensor Pollicis longus. Insertion.

Its use is to draw the thumb nearer the fore-finger. Use.

ADDUCTOR AD MINIMUM DIGITUM *

ARISES a little tendinous, but chiefly fleshy from the whole length of the metacarpal bone, that sustains the middle finger, from thence its fibres contracting equally on both sides do run up to the thumb. Origin.

Is inserted into its second joint, a little below one of its seed-like bones. Insertion.

Its use is to bring the thumb towards the ring and little-finger. Use.

The

* Adductor Pollicis Manus. Albin.

The muscles of the Radius.

The thumb of a dog, or that range of bones set off at some distance from the other fingers, or claws, is only provided with one Extensor, and one Flexor.

Extensor, the origin, progress and termination of this muscle is very little different from the Extensor tertii Internodii Pollicis in man, being a thin, flat muscle, partly tendinous, and partly fleshy, which fills up the cavity or hollowness between the Ulna and Radius.

Flexor is an exceeding small muscle, which ariseth fleshy from one of the bones of the Carpus, and ends so into the second Internode of what is analogous to a thumb in this animal.

C H A P. XXXVIII.

Of the muscles of the RADIUS.

THE Radius, or second bone of the cubit, is bended and extended by the muscles of that part already described in common with the Ulna; but besides, it has four muscles subservient
to

to its own motions of pronation and supination.

PRONATOR TERES

ARISES fleshy from the Os Humeri, Origin.
a little above its internal protuberance,
tendinous and fleshy from that process,
and entirely tendinous from the anterior
Apophyses of the Ulna.

Is inserted thin and tendineo-carnous Insertion.
into the middle of the external part of
the Radius.

Its use is to turn the Radius, together Use.
with the Carpus and whole hand in-
wards, and the palm downwards; which
motion is called pronation.

PRONATOR QUADRATUS

ARISES broad, membranous and Origin.
fleshy from the lower and inner part of
the Ulna, and passing transversely,

Is inserted, of the same breadth, into Insertion.
the external and lower part of the
Radius.

Its use is to assist the former in the Use.
prone position of the hand.

In

The muscles of the Radius.

In a dog it lies upon the membrane that joins the two bones of the cubit together, to both which it adheres, and near the lower end of the Ulna it sends off a tendon obliquely to the extremity of the Radius, where it terminates.

SUPINATOR LONGUS

Origin. ARISES acute and fleshy from the external ridge of the Os Humeri, two or three fingers breadth above the beginning of the Bicornis.

Insertion. Is inserted into the external and inferior part of the Radius, near the Carpus.

Use. Its use is to turn the Radius, &c. outwards, and the palm of the hand upwards, which motion is called Supination.

This is wanting in a dog.

SUPINATOR BREVIS

Origin. ARISES tendinous from the external protuberance of the Os Humeri, and tendineo-carnous from the external and upper part of the Ulna, adhering strictly
to

to the membrane that involves the articulation of these two bones.

Is inserted into the inside of the Radius above, but chiefly below, the insertion of the Biceps.

Its use is to assist the former in pulling the Radius backwards in the supine position of the hand.

C H A P. XXXIX.

Of the muscles of the THIGH.

THE Os Femoris, or thigh bone, has sixteen muscles.

P S O A S M A G N U S

ARISES fleshy from the body of the lowermost Vertebra Thoracis laterally, from the sides of all the Vertebrae of the loins by so many carnosus distinct slips, and a little tendinous from all their transverse processes ;

Is inserted tendinous into the lesser Trochanter of the Os Femoris, and
Q
fleshy

fleshy into the bone a little below that process.

Use. Its use is to bend the thigh, by bringing it forwards.

I L I A C U S I N T E R N U S

Origin. ARISES fleshy from all the inner lip of the semicircular part of the Ilium, from the edge of that bone between its anterior spine and the Acetabulum, and from most of its Costa or hollow part. It joins in with the former, where it begins to become tendinous, in common with which it is inserted.

Use. Its use is to bend the thigh, and bring it directly forwards in progression.

P E C T I N A L I S *

Origin. ARISES broad and fleshy from the spine, or superior and inner part of the Os Pubis.

Insertion. Is inserted into the Os Femoris, a little below the lesser Trochanter, by a flat and short tendon.

Use. Its use is to bend the thigh bone, by drawing it upwards.

In

* Pectineus. Albin.

In a dog it arises by a round and fleshy beginning from the Os Pubis, and soon turns into a broad and thin tendon, which terminates at the inner condyle of the Femor.

GLUTÆUS MAXIMUS

ARISES fleshy from the upper part of the Os Coccygis, membranous and fleshy from all the double spines of the Os sacrum, and one or two of its lowermost single ones, from all the external edge of that bone, below the posterior spine of the Os Ilium, from two ligaments that run from the Ischion to the Os sacrum; i. e. one from its sharp process, the other from its Tubercle (over which part of this muscle hangs in a large fold) and entirely fleshy from more than one half of the circular edge of the Ilium, from the rest of which forwards it springs by a thin and broad tendon, through which one may discover part of the subjacent muscle, being inseparably joined to that of the Membranosus.

Is inserted by a large and thick tendon into the Femur, at a very considerable roughness at one side of the upper

The muscles of the Thigh.

part of the Linea Femoris aspera, a little below the great Trochanter.

Use. Its use is to extend the thigh, by pulling it directly backwards.

GLUTÆUS MEDIUS

Origin. ARISES fleshy from all the outer lip or edge of the spine of the Ilium, except its posterior part, where it springs from the Costa of that bone.

Insertion. Is inserted into the breadth of the great Trochanter by a broad tendon, which runs after an oblique manner.

Use. Its use is to assist the former.

GLUTÆUS MINIMUS

Origin. ARISES fleshy from the lower part of the outer or back side of the Os Ilium, forwards from the edge of its anterior spine, and backwards from the edge of its great Sinus.

Insertion. Is inserted by a large tendon along the fore and upper part of the great Trochanter, and by a small one into the neck of the Os Femoris.

N. B. I mean some part of the tendinous fibres of the Glutæus minimus
are

are spread upon the membrane which involves that part of the bone.

Its use is to assist the two former in Ufe. extending the thigh.

In a dog I call the first Glutæus Externus, it arises membranous from almost all the external part of the spine of the Ilium, which joining with another fleshy beginning from the Sacrum, and from the ligament that is extended between that bone and the Ischium, it becomes altogether carnous about the middle of the muscle that lies under it, and terminates tendinous a little below the great Trochanter externally.

The second, or Medius, is by far the largest, and arises fleshy from all the spine of the Ilium, filling up the hollow part of that bone, being inserted tendinous into the upper and external part of the great Trochanter.

The third, or Internus, arises fleshy from the middle of the Os Ilium externally, adhering in its descent to both its sides; the superior and inner part of the great Trochanter being the place of its partly tendinous, and partly fleshy insertion.

PYRIFORMIS, seu ILIACUS EXTERNUS,

Origin. ARISES thick, broad, and fleshy from the inferior part of the Os sacrum next the Ilium ; from which bone also it derives some part of its origin, growing gradually narrower it becomes tendinous, and

Insertion. Is inserted into the upper part of the dent or cavity, at the root of the great Trochanter.

Use. Its use is to move the Os Femoris upwards, and turn it somewhat outwards.

MARSUPIALIS, seu OBTURATOR
INTERNUS,

Origin. ARISES fleshy from the Os Ilium, Ischium and Pubis, round the internal circumference of the great hole common to the two last named bones. Its inside is tendinous, being divided into several small ones, which unite before its termination.

Is inserted tendinous into the dent or cavity, at the root of the great Trochanter. Insertion.

Its use is to assist the former, in moving the Os Femoris obliquely, and semicircularly outwards. Use.

G E M I N I

Are two very distinct muscles united by a carnosus membrane, both above and below, forming as it were a Marsupium, or purse, for the reception of the tendon of the last described muscle. The superior arises from the acute process of the Ischium, and the inferior from the outer part of the knob, or blunt protuberance of that bone, as also from the ligament that runs from thence to the Os Sacrum. They are both Origin.

Inserted fleshy into the cavity of the great Trochanter. Insertion.

Between these two small muscles the tendon of the Marsupialis runs to its insertion, and they serve not only to turn the Os Femoris outwards, but to preserve Use.

The muscles of the Thigh.

serve that tendon from being hurt by the hardness of the sinuosity of the Ischium which it passes through, as also to hinder it from slipping out of that cavity, while the muscle is in action.

QUADRATUS FEMORIS

Origin. ARISES broad, tendinous, and fleshy, from the outside of the protuberance of the Os Ischii, and passing transversely

Insertion. Is inserted into the outside of the great Trochanter, reaching as low down as the little one.

Use. Its use is to bring the thigh bone outwards.

In a dog it arises from the Tubercle of the Ischium, and fore part of the same bone near the great Foramen.

TRICEPS

Under this appellation are comprehended four very distinct muscles, which, from their use, I name as follows :

ADDUCTOR

ADDUCTOR FEMORIS PRIMUS *

ARISES by a strong roundish tendon, Origin.
from the upper part of the Os Pubis,
next the Pectinæus above the Gracilis ;
which turning into a compact fleshy
belly, it begins to be

Inserted tendinous about the middle Insertion.
of the Linea aspera, being continued
down upon the same five or six inches,
sending out a tendon which joins in with
that of the fourth head.

ADDUCTOR FEMORIS SECUNDUS †

ARISES from the Os Pubis, imme- Origin.
diately under the Gracilis, by a broad,
tendinous, but chiefly fleshy beginning,
and

Is inserted into the Linea aspera, Insertion.
from a little below the lesser Trochanter,
to the first insertion of the last described
muscle.

ADDUCTOR

* Adductor longus Femoris. Albin.

Le premier Muscle du Triceps. Winsl.

† Adductor brevis Femoris. Albin.

Le second Muscle du Triceps. Winsl.

ADDUCTOR FEMORIS TERTIUS *

Origin. ARISES lower down than the former, from the outward edge of the Os Pubis and Ischium; and running obliquely towards the Trochanter minor,

Insertion. Is inserted near the Glutæus maximus.

ADDUCTOR FEMORIS QUARTUS

Origin. ARISES from the protuberance of the Ischium, and the adjoining interior part of that bone, by a tendinous and fleshy origination

Insertion. Is inserted by a round and long tendon into the upper and rough part of the inner and lower appendix of the Os Femoris, being affixed to that bone a little above the condyle, as also to some part of the Linea aspera.

The

* N. B. The third and fourth Adductor of our author, are described as one muscle by Albinus and Winslow, under the names of Adductor magnus Femoris, and le troisieme Muscle du Triceps.

The use of all these four muscles is Use.
to adduce or move the thigh-bone in-
wards, according to their different di-
rections.

OBTURATOR EXTERNUS

ARISES fleshy from all the lower part Origin.
of the Os Pubis and Ischium, round the
outer circumference of their great Fo-
ramen, adhering firmly to its mem-
brane.

Is inserted by a strong tendon into a Insertion.
cavity at the root of the great Tro-
chanter.

Its use is to turn the thigh-bone ob- Use.
liquely outwards.

*In a dog there is yet observable a small
fleshy muscle arising from the Os Ilium, near
the edge of its cavity, called Acetabulum;
and running obliquely over the articulation of
the Femor, is inserted into that bone between
the Vastus internus and Cruræus. I name
it Musculus parvus in articulatione Femoris
fitus.*

C H A P. XL.

Of the muscles of the Os COCCYGIS.

THE bone joined to the extremity of the Os sacrum, called Coccyx, has one muscle on each side, which I call

COCCYGEUS ***

Origin. It arises tendineo-carnous from the acute process of the Os Ischium, between the ligament that reaches from thence to the Os sacrum, and one of the heads of the Gemini: from this narrow beginning it gradually dilates itself into a thin fleshy belly, interspersed with some tendinous fibres.

Insertion. Is inserted into the whole length of the Os Coccygis laterally, as also into the inferior part of the Os sacrum in some subjects.

Use. Its use is to draw that bone inwards or forwards, after the excretion of hardened Fæces, &c.

N. B. The

N. B. The two ligaments that antagonise this pair of muscles, shall be exactly described in my Human and Comparative Osteology, which I design to publish in a short time. In my enquiry after a muscle mentioned by the famous Riolan, under the name of Levator Aniquintus, which he says Coccygi & Ossis sacri extremo affigitur, I happily discovered this muscle.

The tail of a dog, which is only an elongation of this bone, is furnished with abundance of muscles subservient to its many motions: but with their particular descriptions, I think it needless either to trouble myself or the reader.

C H A P. XLI.

Of the muscles of the LEG.

THE leg, made up of two bones, called Tibia and Fibula, has eleven muscles; of which, those that arise from the Os Innominatum, and are inserted into either of these two bones,

R

are

are reckoned common both to the thigh and leg, whereas those which spring from the Os Femoris, and end in the Tibia, are accounted proper to the leg only.

MEMBRANOSUS *

Origin. ARISES by a narrow, tendinous and fleshy beginning, from the fore part of the spine of the Ilium externally ; a little below the great Trochanter its fleshy belly grows wholly tendinous, and covers the two Vastii and Rectus, being firmly affixed to all the Linea aspera, in its descent.

Insertion. Its proper termination is into the superior appendix of the Tibia laterally, between its tubercle and the head of the Fibula, sending down an expansion to envelope the Tibialis Anticus. From the inside of the thigh it is continued down upon the leg, without any remarkable adhesion to the head of the Tibia in its way thither.

Its

* Tensor Vaginæ Femoris. Albin.

Le Muscle Aponeurotique, ou Muscle du Fascia lata. Winsl.

Its use is to extend the leg, and turn it a little outwards ; and by virtue of its large Aponeurosis, it mightily strengthens the action of the muscles, over which it is spread, by keeping them tight in their places, &c. Use.

In a dog it is divided into two very distinct muscles: the superior springs from the spine, and half the Costa of the Os Ilium, forming a thick fleshy belly as it descends straight upon the Rectus ; and about three or four inches below its origin, it dilates into a membranous tendon, by which it is inserted into the Patella and head of the Tibia. Which Fascia, or tendinous expansion, is extended and spread over that of the Biceps ; and together with it, covers all the muscles of the same side down to the foot. Now the contrary disposition or decussation of the fibres of these two Fasciæ, do very much strengthen the action and augment the force of the muscles that lie under them.

The inferior arises from the lower part of the superior Costa of the Ilium, thin and fleshy, a little below that it becomes membranous, and is expanded over the two Vasti and

The muscles of the Leg.

Rectus, firmly adhering to the inside of the thigh-bone ; its tendinous expansion joins in with that of the Glutæus Medius below the great Trochanter.

SARTORIUS

Origin.

ARISES tendinous from the fore part of the spine of the Os Ilium internally, but soon becomes fleshy ; and descending, runs down for some space upon the Rectus, and then going obliquely inwards, it passes over the Vastus internus, and about the middle of the Os Femoris, over part of the Triceps, between the tendon of which and the Musculus Gracilis it descends farther.

Insertion.

Is inserted tendinous into the fore part of the Tibia internally, near its spine, at a little distance from the lower part of its appendix.

Use.

Its use is to move the leg obliquely, or bring one leg and thigh cross the other.

*In a dog it arises fleshy from the Costa near the spine internally, and ends near the
upper*

upper part of the inside of the ridge that is in the middle of the Tibia.

RECTUS *

ARISES fleshy from a tubercle in the lower part of the anterior spine of the Ilium, and tendinous from the Costa Ilii, a little above the Acetabulum. Origin.

Is inserted tendinous into the upper part of the Os Patellæ. Insertion.

Its use is to extend the leg. Use.

In a dog it arises tendinous and fleshy from the lower part of the Costa Ossis Ilii, and forming a large round fleshy body descends, as in men.

VASTUS EXTERNUS

ARISES broad, tendinous, and fleshy from the great Trochanter and upper part of the Linea aspera. Origin.

Is inserted into the head of the Patella laterally. Insertion.

N. B. Its origination is continued from near the insertion of the Glutæus minimus obliquely outwards over the great Trochanter to the Linea aspera; or rather,

R 3

ther,

* Le Droit, ou Gresse anterieur. Winsl.

The muscles of the Leg.

ther, this muscle has a second origination from all that rough line, by fleshy fibres, which run obliquely forwards to a middle tendon, where they terminate.

Use. Its use is to extend the leg.

VASTUS INTERNUS

Origin. ARISES tendinous and fleshy from between the fore part of the Os Femoris and the little Trochanter, and from almost all the inside of the Linea aspera, with fibres running obliquely forwards and downwards.

Insertion. Is inserted tendinous into the inside of the Patella, continuing fleshy lower down than the last; and from its inserting tendon there runs off an Aponeurosis to the muscles below the head of the Tibia.

Use. Its use is to extend the leg in bringing it upwards.

N. B. From the lower point of the Patella there goes a strong, thick ligament, which is affixed to a Tubercle on the fore and upper part of the Tibia; by virtue of which, the extension of the leg

leg is as easily performed as if the tendons of the extending muscles were inserted there.

In a dog the Vastus internus arises from the neck of the Femur internally.

CRURÆUS

ARISES fleshy from between the two Origin.
Trochanters of the Femur. It firmly
adheres to most of the fore part of the
Os Femoris, and

Is inserted tendinous into the Patella, Insertion.
under the Rectus.

Its use is to assist in the extension of Use.
the leg or Tibia.

A dog has a fifth Extensor; which, because it must be demonstrated first, I call Extensor Tibiæ primus Cani proprius. It arises from the spine and half the Costa of the Ilium: in its descent it adheres to the Sartorius by a membrane, and terminates into the Patella.

GRACILIS *

ARISES by a thin and broad tendon Origin.
from the Os Pubis, near its commissure;
it

* Le Gressie interne, ou Droit interne. Win.

it soon grows fleshy, and descending by the inside of the thigh

Insertion. Is inserted tendinous into the inside of the Tibia near the Sartorius.

Use. Its use is to bend the thigh and leg inwards.

In a dog it arises by a small tendon from the tuberosity of the Ischium, which ascends obliquely to the lower and fore part of the Os Pubis, where going a little cross in a straight line it meets with that of its fellow on the other side, whereby the two muscles become united. Near its termination it sends off a tendon that runs down upon the Tibia, and also a broad membranous expansion, which, uniting with that of the Biceps and Membranosus, is continued all over the leg and foot.

SEMI-NERVOSUS *

Origin. ARISES fleshy, in common with the longest head of the Biceps, from the back part of the protuberance of the Ischium.

Insertion. Is inserted by a flat tendon at the inside of the ridge of the Tibia, about an inch

* Semi-tendinosus. Albin.

inch below the termination of the ligament that comes from the Patella. From its tendon, about the head of the Tibia, there goes off a tendinous expansion continued down over the muscles on the inside of the leg.

Its use is to bend the leg backwards, and bring it a little inwards. Use.

SEMI-MEMBRANOSUS

ARISES tendinous from the upper part of the tuberosity of the Ischium. In its descent it runs under the head of the Biceps, between which and the former muscle it runs down the back side of the thigh. Origin.

Is inserted tendinous into the superior and back part of the head of the Tibia, where some part of its tendon is mixed with a ligament that comes from the Tibia and ends in both condyles; or perhaps the ligament springs from the latter, and ends in the former. Insertion.

Its use is to bend the leg, by bringing it directly backwards. Use.

BICEPS

BICEPS.

Origin.

This muscle has two beginnings; its superior head arises tendinous and fleshy in common with the Semi-nervosus, from the tuberosity of the Ischium; the inferior arises from the Linea aspera, a little below the termination of the Glutæus major, by a fleshy acute beginning, which soon grows broader as it descends to join in with the other.

Insertion.

Is inserted tendinous into the upper part of the head of the Fibula, part of its tendon reaching to the head of the Tibia next to it.

N. B. Near its insertion it parts with a tendinous expansion, which covers the muscles lying on the outside of the leg.

Use.

Its use is to bend the leg.

In a dog the thickest and largest beginning of this muscle arises partly from the knob of the Ischium, and partly from a ligament that goes from the Os sacrum to the aforesaid protuberance. In its descent it spreads itself into
a broad

a broad and fleshy belly, which covers part of the Gastrocnæmius. The other head, which is very small, round and fleshy, arises by a long and small tendon from the same ligament. These two join and unite about the ham; a little lower they grow tendinous, and are so inserted into the upper and fore part of the ridge of the Os Tibiæ. This muscle sends off a very broad and tendinous expansion, which covers all the muscles on the outside of the leg, firmly adhering to the middle of the fore part of the Os Tibiæ in its descent to the foot: the posterior part of this Fascia is formed into a distinct tendon, which joining in with the Chorda magna, ends in the Os Calcis.

P O P L I T Æ U S.

ARISES by a round tendon from the Origin.
edge of a cavity in the lower part of
the external condyle of the Femur back-
wards; then running under the liga-
ment that involves the joint, and strictly
adhering to part of the Cartilago lu-
nata, it becomes fleshy as it perforates
the ligament, and joins in with another
fleshy beginning proceeding from the
same membrane.

Is

Insertion. Is inserted into the superior part of the Tibia internally.

Use. Its use is to move the leg obliquely outward, and assist in bending the same.

C H A P. XLII.

Of the muscles of the Foot.

THE foot, or Tarsus, is moved by six muscles.

EXTENSOR TARSII SURALIS, vel EXTENSOR MAGNUS,

Is made up of four heads or beginnings; the two outermost form the muscle, commonly called *Gastrocnæmius externus* and *Gemellus*.

Origin. One of them arises from the back part of the internal condyle of the Femur, and from the bone itself, a little above it, by two thick and short tendons. The other head arises tendinous from a little knob on the outer condyle, just above the beginning of *Popliteus*,
but

but soon turns fleshy. A little below the joint their carnosus bellies unite in a middle tendon; and below the middle of the Tibia it ceases to be fleshy.

The two innermost are known by Origin. the names of *Gastrocnæmius internus* and *Solæus*: one head comes from the upper and back part of the appendix of the Fibula, continuing to derive some of its fleshy *Fibrillæ* from the posterior edge of that bone, for some space below the meeting of the tendons. The other head springs from the back part of the Tibia, about the middle of the fleshy part of the *Poplitæus*, and from thence it is continued down the edge of the bone as low as the other.

The tendons of these four heads join, and make one great tendon, called *Chorda magna*, and *Tendo Achillis*.

Is inserted into the superior and Insertion. hindermost part of the *Os Calcis*, which projecting beyond the *Os Tibiæ*, occasions a considerable distance between the tendon and that bone. The middle and upper part of these two inferior heads,

S

between

between the bones whence they spring, is adorned with a tendinous edge, in form of an arch, under which all the great vessels, &c. of the leg pass.

Use.

Its use is to extend the foot, in bringing it backwards and downwards.

This great Extensor in a dog has but two beginnings, and those tendinous and fleshy from the two Offa sesamoidæa, that adhere to the two Condyles of the Femur, and fleshy from the lower part of the same bone.

EXTENSOR TARSII MINOR, vulgò
PLANTARIS *

Origin.

ARISES narrow, thin and fleshy from the upper and back part of the external protuberance of the Os Femoris, adhering to the membrane that involves the joint in its descent. It soon becomes a long, slender, thin tendon, which emerging from between the fleshy bellies of the Extensor magnus, marches by the inside of its great tendon, and

Is

* Le Jambier Gresse. Winfl.

Is inserted at the extremity of the Os Calcis, below the Chorda magna, and sometimes also it ends into the same bone by two tendons laterally. Insertion.

Its use is to assist the former in the extension of the foot. Use.

In a dog the fleshy belly of this muscle arises in common with the Flexor Digitorum communis, to which it adheres inseparably a good way down; its tendon is very distinct, and ends in the Os Calcis.

N. B. The tendinous Aponeurosis, expanded over the muscles in the bottom or sole of the foot, immediately under the fat, arises by two narrow beginnings from the inferior and posterior part of the Os Calcis, hard by the origin of the Musculus sublimis. The largest adheres firmly to the fleshy part of that muscle, its membranous edge being spread upon the adjacent Abductor Pollicis, and is tacked down between these two muscles to the bones. It splits into four tendons, each of them being soon after subdivided into two, between which the Flexores Digitorum

pass. Is inserted into both sides of that cartilaginous body that covers the first joint of the toes. The other beginning of this *Expansio tendinosa* comes from the same bone, but more externally, and going forwards covers one half of the *Abductor minimi Digiti*, being joined to the former by a thin tendon. Is inserted partly into the upper part of the *Os Metatarsi minimi Digiti*, and partly by a long tendon into the extremity of the *Os Metatarsi*, near its articulation with the third toe. Its use is to preserve the subjacent parts from being compressed in standing, walking, &c. as also to assist the flexion of the first joint of the toes, by pulling that cartilaginous body downwards.

TIBIALIS ANTICUS

Origin.

ARISES tendinous and fleshy from the middle of the upper appendage of the *Tibia* externally; laterally it runs down upon the outside of the *Tibia*, receiving a fleshy disgregated origination from that bone, near the membrane

brane that connects it to the Fibula, as also from the membrane itself. It passes under an annular ligament about the lower part of the Tibia.

Is inserted by a very large tendon Insertion.
into the inside of the Os cuneiforme majus, next the metatarsal bone of the great toe, and by a small one into the upper part of the last named bone laterally.

Its use is to bend the foot, by drawing it upwards. Use.

In a dog it arises fleshy from the upper and fore part of the Tibia, filling up all that cavity that is between the Extensor Digitorum Pedis communis, and a thin bony protuberance or ridge, observable about the upper part of this bone, to which, in its descent, it firmly adheres. A little below its imbanding ligament it parts with a small tendon, that runs upon all the joints of the Pollex Pedis, or great toe, which it serves to extend.

TIBIALIS POSTICUS

ARISES by a narrow fleshy beginning Origin.
from the fore part of the Os Tibiæ, just

under its appendix next the Fibula ; thence passing through a perforation in the upper part of the ligament that connects the two bones, it continues its origin from the back part of the last named bone internally, and from near one-half of the upper part of the Tibia, as also from the membranous ligament between them.

Insertion. Is inserted, having passed through the Fissure at the inner ankle, tendinous into the upper part of the Os naviculare internally laterally, being farther continued to the side of the Os cuneiforme medium ; besides, it gives some tendinous fibres to the Os Calcis, and to the Flexor Pollicis brevis.

Use. Its use is to bring the foot inwards.

In a dog this is but a very small muscle, arising fleshy from the back part of the Fibula and Tibia, between the Flexor Digitorum profundus, and the Sub-poplitæus ; it turns into a long slender tendon about the middle of the last named bone ; and then it unites with that of the fore-mentioned Flexor, a little before it divides in its passage to the toes.

PERONÆUS PRIMUS, seu POSTICUS, *

ARISES tendineo-carnous from the Origin.
fore part of the head of the Perone,
and soon grows into a pretty round
fleshy belly, made up of straight and
compacted fibres; it has also another
beginning, by a great many thin and
fleshy fibres, from the upper and ex-
ternal part of the Fibula, where it be-
gins to rise into a round edge, as also
from the hollownes between that and
its anterior ridge. It passes its long ten-
don through the channel at the outer
ankle, together with the following; then
being reflected into the sinuosity of the
Calcaneum, it runs along the cavity,
made in the Os cuboides, under the
muscles in the sole of the foot.

Is inserted in the outside of the supe- Insertion.
rior part of the Os Metatarsi that sup-
ports the great toe, and by some tendi-
nous fibres into one of the Ossa cunei-
formia next it.

N. B. The

* Peronæus longus. Albin. & Winsl.

The muscles of the Foot.

N. B. The cartilaginous bone in the tendon of this muscle, first (I think) taken notice of by Vesalius, I have observed to be hollowed or sinuated, for the better reception of a little protuberance in the edge of the Os cuboides, upon which it plays, as on a pulley.

Use

Its use is to move the foot outwards, and also to bend it a little.

In a dog it arises fleshy, and a little tendinous from the outside of the Perone, just where it begins to adhere closely to the Tibia, from some part of which it also continues a carnous origin; ends in the Os Metatarfi that sustains the fore toe.

PERONÆUS SECUNDUS, seu ANTICUS, *

Origin.

ARISES by an acute fleshy beginning from above the middle of the external part of the Fibula; it has another carnous origination from the outer side of the anterior spine of this bone, as also from its round edge externally backwards. Its tendon passes through the
fissure

* Peronæus brevis. Albin.

Le moyen Peronier. Winsl.

fissure of the external ankle, being there included under the same ligament with that of the preceding muscle, and a little farther it runs under a particular one of its own.

Is inserted into the upper and fore part of the Os Metatarsi, that supports the little toe by several tendinous filaments, one or two of which are carried straight down, and join in with the tendon that extends that toe. Insertion.

Its use is to pull the foot and toes outwards. Use.

In a dog it arises from a protuberance in the head of the Tibia laterally, next the Perone, from the upper part of which it arises also, and then proceeds as in man.

C H A P. XLIII.

Of the muscles common to the
four lesser T O E S.

TH E muscles of the toes are either common to all the four lesser toes, or they are proper and peculiar to the great and little toe, or common to both these.

The common to all the four lesser are fifteen in number, to wit, two Flexors, two Extensors, four Lumbricales, and seven Interossei.

E X T E N S O R L O N G U S

Origin. A R I S E S by a narrow, tendinous, and fleshy beginning from the superior and external part of the head of the Tibia, next the Fibula, and by a fleshy origin from the upper part of the last named bone ; dividing into four tendons, and passing under the Ligamentum annulare

Insertion. I s inserted, together with the following into the upper part of the second bone

bone of each small toe, sending off on both sides a small tendon * to the last bone of the toes, which unites with its fellow a little before its termination.

Its use is to extend all the joints of the four little toes.

N. B. Vesalius's ninth muscle † of the foot seems to be very distinct from this Extensor, arising from about the middle of the spine of the Fibula, to which the membrane that ties it to the Tibia is connected, by a great many fleshy fibres which run obliquely downward to their tendon, not unlike the Stamina of a feather. It terminates, being often divided in two or three tendons in the upper part of the Os Metatarsi of the little toe.

This muscle is not to be found in a dog.

In a dog the Extensor Longus springs by a round tendon from the fore part of the external

* N. B. Our author, in his Appendix, says, " I am now inclined to believe these small tendons proceed from the Interossei."

† Peronæus tertius. Albin.

Le petit Peronier. Winsl.

ternal Apophysis of the Femur, near the channel of the Patella, and descending thro' a Sinus in the head of the Tibia, it grows fleshy, and then marching down the same bone, and passing under the ligament that binds it in near its extremity, it splits into four tendons, which are inserted into the upper part of the last bone of every toe, near the setting on of the claws, firmly adhering to the Offa sesamoidæa of the joints, as it passes over them.

N. B. Herè, as well as in the fore foot, are observable two springy ligaments that keep the last bone of every toe in an erect or suspended posture, for the conveniency of walking, and for saving of this muscle from being always in action. But more of this in my comparative Osteology.

EXTENSOR BREVIS

• *origin.*

ARISES fleshy and a little tendinous from the fore part of the Os Calcis externally, near its conjunction with the Cuboides, and dilating itself into a fleshy belly, easily divisible into four portions, passes over the upper part of the foot under the tendons of the former.

Is

The muscles of the four lesser Toes. 205

Is inserted by four tendons into the second bone of the toes. Insertion.

They serve to extend the toes. Use.

In a dog it seems to be two distinct muscles, of which one rises tendinous, the other fleshy, from the upper and fore part of the Os Calcis, where it joins the Astragalus externally. The innermost, soon growing fleshy, makes but one tendon, which runs to that toe next the great one ; and about the middle of the first joint, it loses itself in the tendon of the Longus : the outermost gives tendons to the rest of the toes.

PERFORATUS, seu FLEXOR SUBLIMIS,

ARISES by a narrow fleshy beginning from the lower protuberating part of the Os Calcis, between the Abductors of the great and little toe ; but descending, soon dilates into a thick fleshy belly. Origin.

Is inserted by four tendons, which split, unite, decussate, subdivide, and run close, by the edges of the bones, like those of the fingers, into the second Phalanx of the four lesser or outermost toes. Insertion.

T

Its

Use. -

Its use is to bend the second joint.

In a dog it ariseth fleshy from the back part of the external protuberance or condyle of the Os Femoris, and a little tendinous from the Os sesamoidæum, that has a loose connection with the same. Its fleshy belly lies under the Gastrocnæmius, or Extensor suralis, from whose external head it can scarcely be separated; but as soon as it grows tendinous, it climbs along the tendon of that muscle down to the Os Calcis, which it passes over, and then splits into four thin tendons, which form a sort of case, with a little hole on its outside, for the transmission of the tendons of the following. About the middle of the first Internode the half of this Involucrum is discontinued, and the tendon is inserted broad without any division into the beginning of the second joint.

N. B. In the middle of this tendon, as it runs over the end of the Calcaneum, nature has wisely placed a little hard cartilaginous body, which not only prevents that part of the tendon from being injured by the sharp extremity of the bone, but also strengthens the action of the muscle itself; and so, like a
Roller

The muscles of the four lesser Toes.

207

Roller or Patella, renders its motion more easy and glib in running.

PERFORANS, seu FLEXOR PROFUNDUS,

ARISES by an acute tendon, which Origin.
soon becomes fleshy from the back part
of the Tibia, about two or three inches
from its head, above the termination
of the Poplitæus; which beginning is
continued down the inner edge of this
bone by short fleshy fibres, ending in
its large tendon. Its other origination is
by a thin and disgregated tendon from
the edge of the Fibula, interspersed with
abundance of carnous Fibrillæ: betwixt
this double order of fibres the Tibialis
posticus lies inclosed. Having passed un-
der two imbanding ligaments, it marches
through the sinuosity of the Os Calcis,
and about the middle of the soal of the
foot divides into four tendons, which
passing thro' the flits of the Perforatus
are

Inserted into the upper part of the Insertion.
last bone of all the lesser toes.

N. B. It parts with a small tendon just before its division, which running forwards communicates with that of the Flexor Pollicis longus.

Use.

Its use is to bend the toes.

N. B. The Massa carnea, or Musculosæ Carnis Portio, Ja. Silv. In the sole of the foot, may well be reckoned a third head or beginning of this muscle; for it arises by a thin fleshy origin from most part of the sinuosity of the Calcaneum, which is continued forward for some space on the same bone: besides, it has a thin tendinous beginning from the fore part of the lower protuberance of this Os Calcis, and soon becoming all carnous it joins in, sloping with the tendon of this Flexor, just at its division into four tendons. This Moles carnea is wanting in a dog.

In a dog this muscle arises fleshy from all the upper half of the Fibula, that stands off at a distance from the Tibia, filling up most of the space between them. It splits into five tendons; one runs to the great toe, which in this animal is less than any of the four; the

the rest pass through so many cases, made by the tendons of the Sublimis, to their insertions at the third bone of each toe.

N. B. I keep by me the muscles of a Fœtus prepared, in which I observed a small fleshy muscle to arise from the Os perone, near its extremity between the Flexor Pollicis longus, and the Peronæus brevis: this, in the sinuosity of the Calcaneum, grows tendinous, and adhering strictly to the Massa carnea in its progress forwards, joins ~~in~~ with the tendon of the Perforans that belongs to the toe next the great one.

LUMBRICALES

They all arise from the tendons of the Perforans at some distance from the union of the Massa carnea, with the single tendon of that muscle; are

Inserted by four small tendons into the inside of the first joint of the lesser toes, next the great toe.

Their use is to assist in bending the toes.

INTEROSSEI

Origin. The seven interosseous muscles have the same situation with those in the hand ; but differ in their origin, insertion, * and use.

Origin. The first, or Abductor Indicis Pedis Cowp. arises from all the outside and fore part of the metatarsal bone of the toe next the great one.

Origin. The second, or Adductor ejusd. fills up all the distance between this and the Os Metatarsi of the middle toe, from the sides of both which it arises.

Origin. The third, or Adductor medii Digiti ejusd. belongs to the side of the second lesser toe next the first, and is only conspicuous internally, arising from all the fore part of this metatarsal bone, and by a few fibres from the upper part of the first also.

The

* N. B. Our author, in his appendix, says,
 “ Upon a stricter enquiry I have observed
 “ that the Interossei Digitorum Pedis do really
 “ all terminate as they do in the fingers.”

The fourth, or Abductor medii Digiti ejusd. which runs along the first joint of this toe, on the other side, arises externally from the metatarsal bone of this, and of that which supports the third toe, filling up all the space between them. Origin.

The fifth, or Abductor tertii Digiti ejusd. arises from the upper part of the metatarsal bone, that stays the third toe, and also from the tendon of the Musculus Peronæus longus. Origin.

The sixth, which belongs to the other side of this third lesser toe, arises from the sides of this metatarsal bone; and from that which supports the little toe, filling up all the space between these on the back side of the foot. It has also a tendinous adhesion to the long Peronæan muscle. Origin.

The seventh, or Adductor minimi Digiti ejusdem, arises from the upper part, or the Os Metatarsi minimi Digiti, being also affixed to the aforesaid tendon. Origin.

They

Infertion. They are all inserted partly into the *Ossa sesamoidæa*, placed on the articulation of the first bone of the toes, with the *Ossa Metatarsi*, and partly on the side of the same bone.

Use. Their use is to move the four lesser toes laterally ; for when the *Interni* act, the toes are drawn inwards towards the great toe, and when the *Externi* act, they are pulled nearer the little one, or are all drawn outwards from the great one.

N. B. All the muscles that I said arise from the tendon of the *Musculus peronæus*, arise rather from the membrane that covers this tendon, and incloses it in the *Sulcus* of the *Os cuboides*.

The four straight and two oblique muscles, situate in the hollow of a dog's hind foot, run altogether conform to those already described in his fore foot.

C H A P. XLIV.

Of the muscles of the GREAT TOE.

THE Pollex Digitorum Pedis, or great toe, has six muscles.

EXTENSOR LONGUS *

ARISES by an acute, tendinous, and fleshy beginning, from near the upper part of the Fibula, and from the membrane that connects it to the Tibia. Origin.

Is inserted tendinous into the upper part of the last bone of the great toe. Insertion.

Its use is to extend that joint by pulling it upwards. Use.

EXTENSOR BREVIS Cowp. †

ARISES tendinous and fleshy from the fore part of the Os Calcis, near its articulation with the Astragalus. Origin.

Is

* Extensor proprius Pollicis Pedis. Albin.

† Winslow and Albinus do not separate this muscle from the Extensor brevis communis Digitorum.

The muscles of the great Toe.

Insertion. Is inserted tendinous near the upper part of the second bone of the great toe.

Use Its use is to extend this Internode

The Pollex Pedis in a dog being armed with a claw much more hooked than any of the other four toes, is joined to one of the bones of the Tarsus near the upper part of the Os Metatarsii, that answers the fore toe; whence the hind foot of this animal does more resemble the hand of a man than his fore foot does.

This part is extended by two muscles, one proper, which arises fleshy from the Fibula and membrane that connects it into the Tibia: its small belly soon turns into a fine tendon, which adhering to that of the Tibialis anticus, runs on to the last joint of this toe, where it ends.

The other is a tendon cast off from the Tibialis anticus already described.

FLEXOR LONGUS

Origin. ARISES by a sharp, tendinous and fleshy beginning from the upper and back part of the Fibula, being continued

nued down the same bone almost to its extremity, passing its tendon under a ligament at the inner ankle.

Is inserted into the last bone of the great toe, giving a tendon to the Os Calcis in its way. Insertion.

Its use is to bend this joint. Use.

FLEXOR BREVIS

ARISES tendinous from the Os cuboides and Os Cuneiforme that jets out in the bottom of the foot, it being inseparably united both with the Adductor and Abductor Pollicis. Origin.

Is inserted into the external Os sesamoidæum of the great toe adhering to the Adductor. Insertion.

Its use is to bend this second joint. Use.

In a dog this range of bones is bended by a slip cast off from the Flexor profundus.

ADDUCTOR

ARISES by a long, thin, disgregated tendon, from the Os Calcis, under the tendinous part of the Massa carnea, from the Os Cuboides, from the Os Cuneiforme Origin.

The muscles of the great Toe.

neiforme medium, near the insertion of the Peronæus primus, and from the upper part of the Os Metatarsi of the second toe : it is soon dilated into a pretty large belly.

Insertion. Is inserted into the external Os sesamoidæum of the great toe.

Use. Its use is to bring this toe nearer the rest.

A B D U C T O R

Origin. ARISES fleshy from the inside of the lower protuberance of the Os Calcis laterally, and tendinous from a little tubercle in the same bone, near the Os cymbiforme. It only adheres to the other bones on the inside of the foot, filling up the hollownes in the Os Metatarsi Pollicis.

Insertion. Is inserted into the internal Os sesamoidæum of the first bone of the great toe, its tendons being farther continued upon the same bone laterally.

Use. Its use is to pull the great toe from the rest.

N. B. It

N. B. It has very often a tendinous origin from the edge of the Os cymbiforme, receiving near this bone some tendinous filaments from the Tibialis anticus.

In a dog these two last described muscles are never found.

C H A P. XLV.

Of the muscles of the little T O E.

THE little toe has two muscles.

A B D U C T O R *

ARISES fleshy and tendinous from Origin. the semicircular edge of a cavity on the outside of the inferior protuberance of the Os Calcis; it has another tendinous beginning from the Os cuboides, and a third from the upper part of the Os Metatarsi minimi Digiti.

U

Is

* N. B. Winflow divides this muscle into two, viz. Le grand Parathenar, & le Metatarsien.

Insertion. Is inserted into the upper part of the first bone of the little toe externally laterally.

Use. Its use is to draw the little toe outwards from that next to it.

FLEXOR PRIMI INTERNODII MINIMI
DIGITI Cowper. *

Origin. ARISES fleshy from all the outside of the metatarsal bone that sustains this toe, below its protuberating part; besides, it has another beginning from the tendon of the Peronæus primus, as it runs in the Sulcus or furrow of the Cuboides.

Insertion. Is inserted into the cartilage that is placed upon the articulation of the first joint of this toe.

Use. Its use is to bend this joint.
In a dog these two are wanting.

* Flexor brevis minimi Digiti. Albin.
Le petit Parathenar. Winsl.

C H A P. XLVI.

Of the muscles common to the great
and little T O E.

TRANSVERSALIS PEDIS Jul. Cass.
Placent. *

ARISES tendinous from the external Os sesamoidæum of the great toe, firmly adhering to the tendinous part of the Adductor Pollicis, soon growing fleshy, it passes over the extremity of two of the metacarpal bones, between them and the Flexores Digitorum ; and then growing broader, Origin.

Is inserted partly into a tendon that proceeds from the Expansio tendinosa, in the sole of the foot, and partly into that cartilaginous ligament that covers the articulation of the first joint of the third lesser toe with its Os Metatarsi, some of its fleshy fibres being continued upon the same part of the little toe. Insertion.

U 2

Its

* Le transversal des Orteils. Winsl.

220 The Præputium and Urethra in a Dog.

Use.

Its use is to bring the third and fourth lesser toes nearer the other two and the great one.

In a dog there is no such muscle.

Of the PRÆPUTIUM and URETHRA in a Dog.

To compleat the Canine Myology, there remain yet to be described the muscles of the Præputium and Urethra.

The Præputium, which in a man has no muscles, is provided with one pair, and a single one in a dog. The first I call

Præputium adducens, which proceeds from the Membrana carnosæ, near the Cartilago ensiformis, as it descends on each side the Linea alba, it grows thicker and narrower, and is inserted into the Præputium laterally. When this acts, I believe, it serves to bring the Præputium over the glans after copulation, (tho' Blasius affirms, that it draws the Penis forwards, tempore coitus) being therein much assisted by the contraction of two ligaments which come from about the middle of the Linea alba, and end in the Præputium. The second is

Præputium Abducens, or Retrahens, which is a single small muscle arising from
the

the Sphincter Ani, and firmly adhering to the Accelerator Urinæ, from which it receives two fleshy slips as before noted, runs up along the Urethra, and terminates in the lower part of the Præputium, where its dilated fibres are expanded all over it. Its use is to draw back the Præputium, and so help to denude or uncover the glans, in order to coition. It may likewise serve, in some measure, to dilate and keep open the Urethra at that time, lest the seed should meet with any impediment or lett in this very long passage.

That part of the Urethra between the Prostates and the union of the two Corpora cavernosa, being two or three inches in length, according to the bigness of the animal, is surrounded by a thin fleshy muscle, contrived and placed there on purpose for to compress the many glands that open within this passage, and so oblige them to discharge their contents, which serve as a Vehiculum to forward the descending Semen tempore coitûs; to which also the contraction of its fleshy fibres, in narrowing this canal, contributes in a great measure, as Mr. Cowper has well observed, in boars and in bulls.

A N

A P P E N D I X

Concerning* the Muscles of the
CLITORIS and VAGINA in a
Woman.

THE Clitoris is furnished with two
pair of muscles.

The first, * discovered by Fallopius,

Origin.

ARISES tendinous and fleshy from the
Os Ischion internally, near its conjunc-
tion with the Pubis: in its ascent it ad-
heres to the inner edge of the last named
bone, and

Insertion.

Is inserted fleshy into the Crus, or be-
ginning of the Clitoris.

This muscle, with its partner, serve
for the erection of this part, by detain-
ing the blood in its cavernous sub-
stance.

Use.

The second.† muscle belonging to the
Clitoris, is by De Graaf very improperly
called

* Erector Clitoridis. Albin.

† Constrictor Cunni. Albin.

called Sphincter Vaginæ, since it does not surround that part with circular fibres, though it has the same effect as if it did.

It arises fleshy, partly from the Sphincter Ani, and partly from a white hardish substance placed under the skin in the Perinæum, between the lower part of the Pudendum and the Anus; from thence it climbs up the side of the Vagina, near its outer orifice, covering all the Corpus Vaginæ Vasculospongiosum, which is nothing but a production of the Clitoris, and

Origin.

Is inserted into the body or union of the Crura Clitoridis laterally.

Insertion.

Its use is the same with the preceding muscle; and besides, by compressing the Corpus spongiosum, or Plexus retiformis, it serves to straiten the orifice of the Vagina, by hindering the blood in its return from thence.

Use.

The Vagina Uteri is furnished with two pair of muscles, not mentioned by any author, as far as I know.

The

Origin. The first arises from the inner edge of the Os Pubis, midway between the Ischion and the beginning of the Crus Clitoridis ; it ascends a little obliquely, and

Insertion. Is inserted into the Vagina.

Use. Its use is to dilate the sheath, and open the extremity of the Meatus urinaris ; its termination being very nigh the orifice of that passage.

Origin. The second arises tendinous and fleshy from the Os Pubis internally, in common with the Levator Ani.

Insertion. Is inserted into the upper part of the Vagina, at the side of the Meatus urinaris, or Collum Veficæ.

Use. This acting pulls up the Vagina, and so constricts the neck of the bladder after the evacuation of urine.

N. B. These muscles can never be well raised, unless the Os Pubis be taken off from the Ilium and Ischion, with the Intestinum rectum, the Vagina and Vefica urinaria left adhering to it.

A LIST of the MUSCLES found in a
Human Body, that are not met
with in a Dog.

PYRAMIDALIS *Abdominis*

Musculus Frontalis verus

———— *Nasi proprius, seu Rinæus*

Elevator Labiorum communis

Depressor —————

Stylo-chondro hyoidæus

Coraco-hyoidæus

Salpingo-staphilinus

Thyreο-staphilinus

Subclavius

Levator Ani externus

Serrator minor anticus

Palmaris longus

———— *brevis*

One of the Extensores Carpi Radialis

Extensor tertii Internodii Indicis

Adductor Indicis

*All the muscles of the Thumb, except one Flexor and
one Extensor*

All

226 The muscles of the human Body.

All the muscles of the Little-Finger, except the Extensor

Supinator Longus

Coccygæus

Tendinosa Expansio in Planta Pedis

Par nonum Pedis Vesalii

Massa carnea in Planta Pedis

All the muscles of the Great-Toe, except one Extensor

Abductor minimi Digiti

Flexor primi Internodii minimi Digiti

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A N
ETYMOLOGICAL TABLE
OF THE
MUSCLES.

The MUSCLES take their Names,

I.

From their ACTION or USE.

ABDUCTOR, from abducere, to move or draw from.

Accelerator, from accelerare, to hasten or dispatch.

Adductor, from adducere, to move or bring towards.

Annuens, from annuere, to nod the head forwards, as when we give our assent to any thing.

Attollens, from attollere, to lift or raise up.

Caput

Caput concutiens, from concutere, to shake.

Constrictor, from constringere, to straiten or bind fast.

Cremaster, or Suspensorius, from κρεμάω, suspendo, to suspend.

Depressor, from deprimere, to pull or draw down.

Detrusor Urinæ, from detrudere, to thrust or squeeze out.

Diaphragma, from διαφράττω, intersepio, because it divides the cavity of the Thorax from that of the Abdomen.

Dilatator, from dilatare, to enlarge or widen.

Distortor Oris; from distorquere, to pull or set awry.

Extensor, from extendere, to extend or stretch out.

Flexor, from flectere, to bow or bend.

Indicator, from indicare, to shew or point, because that Finger is used in the Demonstration of any thing.

Levator, from levare, to lift or pull up.

Masseter, from μασσάσθαι, manduco, comedo, to eat.

X

Pronator,

Pronator, from pronus, which denotes the posture of lying with the face downwards; but the word is here taken for turning the palm only downwards.

Renuens, from renuere, to nod the head back, when we deny or refuse any thing.

Retrahens, from retrahere, to draw back.

Sartorius, from the use taylors make of it, to fit cross-legg'd.

Sphincter, from σφιγγω, constringo, to shut.

Supinator, from supinus, which denotes that posture of lying upon the back, with the belly upwards; but in this case it is taken for turning the palm only upwards.

Tensor, vide extensor.

II.

From their Beginning, or Origin.

Graphoides, or Styliformis, from γραφίς, stylus, because of its supposed origination from the process of the temple-bone, so called. The Musculus digastricus was thus named by the ancients.

Pectinæus, vel Pectinalis, from Pecten, i. e. Os Pubis.

Pterigoidæus,

Pterigoidæus, or Aliformis, from πτερυξ, πτερος, ala, and εἶδος, forma.

Sacer, from the Os sacrum.

Sacro-lumbalis, from the last named bone, and from the transverse processes of the loins.

Semifibulæus, from one half the Fibula.

Transversalis, from the transverse processes of the back and neck.

Zygomaticus, from the bone called Ζύγωμα, which is derived from ζυγος, vel ζεύγος, Jugum, a yoke ; Os jugale, the yoke-bone.

III.

From their Colour.

Lividus, i. e. Pectinæus, from its black and blueish colour.

IV.

From their Composition and Variety of Parts.

Biceps, from its having bina capita, two heads or beginnings.

Bicornis, from its having two origins, like so many horns.

Complexus, from its being made up of many tendinous and fleshy fibres, intricately mixed one with another.

Complicatus is another name for the same muscle, having the same etymology.

Digastricus, or Biventer, from δῖς & γαστήρ, because it has two fleshy bellies, with a tendon intervening.

Gemellus, from its having a double origin.

Gemini, from their being two distinct muscles, united only by a membrane.

Quadriceps, from its arising by four heads.

Triceps, from its arising by three heads.

V.

From the Course and Direction of their
Fibres.

Oblíquus.

Orbicularis.

Rectus.

Transversalis.

VI.

From their Figure or Shape.

Cucullaris, from the resemblance the lower part of this pair of muscles has to that part of a monk's hood that lies between his shoulders.

Deltoides, or Deltiformis, from δέλτα, the fourth Greek letter, and εἶδος, forma.

Fascialis,

Fascialis, i. e. Sartorius, from its crossing some of the muscles of the thigh and leg, like a swath-band or Fascia.

Fascia lata, from its inclosing most of the muscles that lie on the Os Femoris.

Lumbricalis, from the likeness of their shape to the common earth-worm.

Marsupialis, because the Gemini, by some reckoned a part of this muscle, do form a Marsupium, or fleshy purse by their membranous connexion, through which its tendons pass.

Pyramidalis, because it arises by a broad basis, and terminates by a narrow point like a pyramid, or pyramidal figure, which is broad beneath, and sharp or narrow above.

Pyriformis, from the faint resemblance it bears to a pear.

Quadratus, from its square or quadrilateral figure.

Rhomboides, from $\rho\acute{o}\mu\beta\omicron\varsigma$, a diamond figure, and $\epsilon\acute{\iota}\delta\omicron\varsigma$, forma, i. e. a diamond-like figure whose opposite sides and opposite angles are equal.

Rotundus, from its being round and spherical.

Scalenus, from the figure of a triangle, whose three sides are all unequal, called in Greek *σκαληνός*.

Serratus, from its being divided at its termination into several distinct fleshy portions, which are not unfitly compared to the teeth of a saw, called *Serra* in Latin.

Solæus, or Soleus, from *solea*, a sole-fish.

Splenius from *Splenium*, a ferula, or rouled splint, which surgeons are wont to apply to the sides of a broken bone.

Teres, from it being long and round.

Trapezius, from *τράπεζα*, which denotes in Geometry a kind of quadrilateral figure; but properly it signifies *mensa*, a table. Hence some call this the table muscle.

Triangularis, from *triangulum*, which is a figure with three corners.

VII.

From their Infertion, or Termination.

Ciliaris, from *Cilia*, or the soft cartilaginous edges of the eye-lids, into which the Tharſi, or hairs, are fixed.

Mastoidæus, or Mastoides, i. e. *Mammiformis*, from *μάσθος*, *uber*, *inamma* & *εἶδος*, *forma*.

Semispinalis,

Semispinalis, from half of the spinal processes of the back.

Spinalis, from several of the spines of the neck.

VIII.

From their Origin and Insertion.

Basio-glossus, from βάσις, the fore bone of the Os Hyoides, and γλῶσσα, lingua, the tongue.

Cerato-glossus, from κέρας, αἶδος, cornu & γλῶσσα.

Coraco-Brachialis, from the Processus, called κορακοειδής, from κόραξ, κὸς, corvus & εἶδος, forma and Brachium.

Coraco-Hyoidæus, from the last named process and the Os Hyoides.

Crico-Arytænoidæus, from κρίκος, annulus, and ἀρύταινα, guttus, s. gutturnium, an ewer or cuet.

Crico-Thyreoidæus, as above, and from θυρεοειδής, i. e. scutiformis.

Genio-glossus, from γένειον, mentum, the chin.

Genio-Hyoidæus, as above, and from Os Hyoides.

Glossio-Staphilinus, from γλῶσσα, lingua, and σαφυλή, uva, uvula, gargareon.

Hyo-thyreoidæus, from the Os Hyoides, and θυρεοειδής, scutiformis.

Mylo-

236 An etymological Table

- Mylo-hyoidæus, from *μύλοι*, dentes molares.
 Occipito-frontalis, from the Occiput and skin of the Os Frontis.
 Palato-staphilin^{us}, from the Os Palati and *σαφυλή*, uvula.
 Salpingo-staphilin^{us}, from *σάλπιγξ*, *ιγγος*, Tuba.
 Sterno-hyoidæus, from the Os Sterni or Pectoris.
 Sterno-thyreoidæus, as above.
 Stylo-chondro hyoidæus, from *σύλος*, Stylus, i. e. Processus stiliiformis, from *χόνδρος*, cartilago, &c.
 Stylo-glossus, from *σύλος* & *γλῶσσα*.
 Stylo-hyoidæus, as above.
 Thyreo-artynedoia^{us}, from *θυριὸς*, scutum.
 Thyreo-staphilin^{us}, as above.

'Tis worth observing that the first word denotes always the origin, and the last the insertion of the muscle.

Trachelo-mastoidæus, from *τράχηλος*, collum, cervix; its chief origin being from the Vertebrae of that part.

IX.

From the parts they belong to.

Coccygæus, from *κόκυξ*, cucullus, i. e. Os

Coccygæus, a bone so called from its shape.

Oesophagus,

Oesophagus, from οἰσοφάγος, œsophagus, gula, the gullet.

Pharyngæus, from φάρυγξ, guttur, fauces.

Cephalo-pharyngæus, from κεφαλὴ, caput.

Chondro-pharyngæus, from χόνδρος, cartilago.

Crico-pharyngæus, from κρίκος, annulus.

Glosso-pharyngæus, from γλῶσσα, lingua.

Hyo-cerato-pharyngæus, as above.

Mylo-pharyngæus. from μύλοι, dentes molares.

Pterigo-pharyngæus, from πτέρυξ, ala.

Salpingo-pharyngæus, from σάλπιγξ.

Stylo-pharyngæus, as above.

Syndesmo-pharyngæus, from συνδεσμός, vinculum, ligamentum.

Thyreopharyngæus, from θυρεός, scutum.

Rinæus, from ῥιν, ῥινός, nasus.

Stapidæus, from stapes.

X.

From the Parts they constitute or compose.

Buccinator, because it makes up the greatest part of the cheek, called Bucca.

Gastrocnemius, from γαστροκνημία, sura, the calf of the leg, which comes from γαστήρ, venter, & κνημὴ, tibia.

Gluteus, from γλῦς, nates.

N. B. The

N. B. The Pharyngæus, with all its various orders of fibres, might have been described under this head as well as in the former.

Suralis, from fura, the calf of the leg.

Θέναρ, feu Thenar; thus the Greeks call the rising and prominent fleshy part in the palm of the hand, which word seems to come from δέινειν, percutere, vertebrare.

XI.

From their passing through some Part.

Perforans, because its tendon passes through a slit or fissure in that of the Perforatus.

Trochlearis, from passing its tendon through a cartilage called Trochlea, a pulley.

XII.

From their Quantity or Magnitude, with respect to one another.

Brevis.

Gracilis, from its being the thinnest and slenderest muscle of the Tibia.

Latissimus, from its being the broadest and largest muscle that lies on the back or neck.

Longissimus, from its being the longest of those of the back.

Longus.

Longus.

Magnus.

Major.

Maximus.

Medius.

Minimus.

Minor.

Parvus.

These need no explication.

Platysma-myoides, i. e. Expansio vel Dilatatio muscularis, from *πλάγισμα*, latum lintheum, vel aliquid simile, or from *πλαγισμός*, Dilatatio, and *μῦς*, musculus, & *εἶδός*, forma.

Vastus, because it and its fellow are the two biggest and thickest muscles belonging to the leg, or Tibia.

XIII.

From their Situation or Position.

Angonæus, vel Anconæus, from *ἄγκων*, cubitus, but, in a strict sense, is taken for the process of the cubit, called the elbow.

Anticus, that which lies in the fore part.

Antithenar, from its situation, which is opposite to the Thenar, or from its use, which is contrary to it.

Brachæus, from *βραχίων*, brachium.

Cruræus,

Cruræus, from Crus, i. e. Femur.

Cubitalis, }
Cubitæus, } from cubitus, i. e. ulna.

Externus.

Fibulæus, from fibula.

Hypothenar, because it is situate below the
Thenar.

Iliacus, from the Os Ilium.

Immersus, from its being sunk as it were under
the rest of the muscles of the Scapula.

Infra-spinatus, below the Spina Scapulæ.

Intercostales, from their being placed inter Cos-
tas, or between the ribs.

Internus.

Interosseus, between the metacarpal and meta-
tarsal bones of the hand and foot.

Inter-spinales, between the spines of the neck.

Inter-transversales, between the transverse pro-
cesses of the neck or loins.

Inter-vertebrales, from their being placed upon
and between the **bodies** of some of the Ver-
tebræ of the neck.

Palmaris, from the **spreading of its tendon** upon
the palm of the hand.

Plantaris, from the supposed **spreading of its**
tendon upon the sole of the foot, under the
skin.

Pectoralis,

Pectoralis, from the Os Pectoris.

Peronæus, from the Perone, *περόνη*, in Greek, the smallest bone in the leg.

Poplitæus, from Poples, the ham.

Posticus, that is, situate behind, or on the back side.

Psoas, from *ψόα*, lumbus, the loins.

Radialis, }
Radiæus, } from Radius.

Subclavius, from Clavicula, under which it is placed.

Subscapularis, under the Scapula.

Supra-spinatus, above the spine of the Scapula.

Temporalis, from tempora, the temples.

Tibialis, }
Tibiæus, } from Tibia.

Ulnaris, from Ulna.

XIV.

From their Substance.

Membranofus, because of its broad membrane-like tendon.

Semi-membranofus, from its being half membranous.

Semi-nervofus, }
Semi-tendinosus, } from its being half tendinous.

Y

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An Account of what Dr. DOUGLAS obliges himself to perform in a COURSE of HUMAN and COMPARATIVE ANATOMY.

In the OSTEOLOGICAL PART :

1. **T**O discourse on the bones, cartilages, and ligaments in general.
2. To examine the bones in particular, all of them being so prepared as their inner substance may be viewed as well as their outer.
3. To shew the articulation of the bones both in a skeleton and in a fresh subject.
4. To demonstrate the Periosteum, the Medulla, the entrance and exit of the blood vessels, with all the mucilaginous glands, seated in or near the joints.
5. To compare the bones of a Fœtus with those of an adult, and to give an account of their accretion from conception to the birth.
6. To adjust the difference between a male and female skeleton.
7. To shew and describe all the cartilages and ligaments.

In

In the MYOLOGICAL PART :

1. To give the structure of a fibre, membrane and muscle in general.

2. To raise every muscle in particular ; shewing its origin, progress and insertion ; giving an account of its first discoverer, and to whom we are obliged for its best description.

In the ENTEROLOGICAL PART :

1. To give the division of the body, with a description of its common containing parts, as the Cuticula, Cutis, &c.

2. To shew all the Viscera contained in the cavity of the Thorax and Abdomen in Situ naturali, observing their situations and mutual connexions one with another, and from thence explaining several Phœnomena, that happen in the practice of physick and surgery.

3. To demonstrate each Viscus in particular.

4. To shew the parts subservient to generation in both sexes, in fresh bodies, and dried preparations.

5. To shew the organs of sense in fresh and dried preparations.

6. To demonstrate all the parts of a human Fœtus that differ from an adult, as the Thymus,

Glandulæ renales, (their numerous vessels being all filled with different coloured wax) the Funiculus and Vasa Umbilicalia, the Foramen Ovale, Canalis Botalli vel Ductus arteriosus, Ductus venosus, &c.

7. To examine the Placenta uterina, with the membranes that involve the Fœtus in Utero.

IN THE NEUROLOGICAL PART :

1. To discourse of the nerves in general.
2. To trace all the nerves that rise from the Medulla oblongata through the holes in the Cranium to their respective terminations in the nose, eyes, ears, tongue, skin of the head, and face, neck, and parts contained in the chest and lower belly ; and those that spring from the Medulla spinalis into the extremities, where they chiefly end.

IN THE ADENOLOGICAL PART :

1. To explain the structure of the glands in general.
2. To demonstrate the brain and spinal marrow, with all the membranes that involve them.
3. To examine the salivary, the mammary, and all the other conglomerate glands, injecting the excretory ducts of some of them with mercury and wax.
4. To

4. To demonstrate several of the lymphatic or conglobate kind.

In the ANGEIOLOGICAL PART :

1. To discourse of the arteries, veins, and lymphatic vessels in general, demonstrating their several coats and valves.

2. To fill all the arteries with a ceraceous matter.

3. To inject the Sinus's of the Dura Mater, and fill some of the veins with a different coloured wax, and to trace the rest of them, particularly the Azygos, the ramifications of the Porta, and those that are opened in Venæsection.

N. B. The above mentioned parts are all to be exhibited in human bodies, most of them being likewise shewn in dried preparations, and in describing them the following particulars are to be considered and explained, viz. their names in Greek, Latin and English, etymology, discoverer, number, situation, connexion, figure, substance, cavities, magnitude, membranes, or coats, vessels, colour, &c. with their most probable use. There will be added in the demonstration of the Viscera and Glands, some observations from dissecting morbid bodies, how they may be preternaturally affected, with an

explication of the symptoms that proceed from thence.

In the COMPARATIVE PART of this Course :

1. To demonstrate and compare all the parts of a quadruped at the same time with those of a human body, that their different structures may be better observed.

2. To shew the Vasa Lactea, the glands of the Mesentary, Receptaculum Chyli, Ductus Thoracicus, and its opening into the subclavian vein.

3. To demonstrate the four stomachs of some animal that chews the cud, and to give an account of the cause and use of rumination.

4. To shew the peristaltic motion of the guts, and the action of the Diaphragm in a rabbit.

5. To demonstrate the Uterus of a Cow, with its Cotyledones, and the liquors and membranes of the Fœtus included.

6. To raise all the muscles in a Volatile, inject its arteries, and trace its nerves, to examine the internal and external structure of its ear, to demonstrate the Membrana nictitans, and shew the contrivance that hinders the tendon of its muscle from compressing the globe of the eye while it acts, with the structure of the other parts of the eye. To examine the two stomachs,

viz.

viz. the Ingluvies and Ventriculus, or gizzard, with the Prolobus or Vestibulum, the heart and lungs, with the perforations or openings of the last mentioned into several pellucid membranous bladders that lie between the folds of the intestines.

7. In a cock, to demonstrate the Testes, kidneys, ureters, the two Penis's, and Cloaca.

8. In a hen, to shew the Ovarium, with the Racemi Vitellorum, the Oviductus and Uterus.

9. To shew the circulation of the blood. and the animalcula in Semine masculino with glasses.

10. To give the anatomical description of all the parts of an oyster, skait, lobster, and whiting : the structure of the heart, and the elegant contrivance of the gills, will be demonstrated in this last named fish, with an account of the motion of the blood in those animals that have but one ventricle in their heart.

11. To exhibit the structure of that most abstruse organ of hearing in seven or eight different animals.

After a faithful and compleat demonstration of the above mentioned particulars, to conclude the course, I will give a short history of the

OECONOMIA ANIMALIS, drawn from the struc-

258 The Order of dissecting the
ture of the parts thus described, and comprehended under the following heads, viz. Of mastication, deglutition, digestion, chylication, sanguification, the circular motion of the blood in a Fætus, and in an adult, of nutrition, secretions of all the particular humours in the body from the Massa sanguinea, of generation, respiration, muscular and progressive motion, with an account how the senses are performed, &c.

From the Blue Boar, over against the end of
Fetter-lane, in Fleet-street, September 24,
1706.

The ORDER of DISSECTING
the MUSCLES, from the twelfth
chapter of ALBINUS's first book,
De historia musculorum.

—HOC tamen addendum esse putamus,
quod si quis omnes in uno eodemque
corpore persequi velit, sic ut neque uni ulli
multum detrimenti inferre necesse sit, neque
corruptio corporis impediat, ab Abdomine inci-
piendum, & dein eo regionum, in quibus mus-
culi

culi fiti, & quas proximus liber definiet, ordine progrediendum, quo eas nunc recensēbimus: quæ circa Funem spermaticum & Testem, media inter Thoracem Abdomenque, Lumborum & Coxarum pars prior, Pectus, Dorsum cum Lumborum posteriori parte & Cervice, Thoracis latus, Spatia intercostalia, quæ sub Pectore, Collum, Calva, circa Auriculam, Facies, Mala cum latere Calvæ, quæ sub Mala, Colli sceleti latus parsque prior, Natis, Femur, quæ circa Perinæum viri, vel Genitalis muliebris ambitus, quæ circum Anum, Scapula cum parte Humeri superiore, Humerus, Oculi Cavum, Cubitus, Manus, Crus, dorsum Pedis extremi Digitorumque Pedis, Planta & Digitorum pedis pars inferior, Auricula, Auris interna. In unaquaque autem regione ipsi musculi eo ordine quærendi, quo sitos eos esse, eodem proximo libro docebimus. Hanc potissimum, aut certe non multum ab ea diversam viam, ni quid forte intercedat, tenendam esse, usu, tractandoque cognovimus.

A LIST of MUSCLES, according to their Situation, in the different regions of the body, from the third chapter of ALBINUS's second book.

MUSCULI in his regionibus, in Calva Epicranius.

CIRCA AURICULAM, Attollens auriculæ, Anterior ejusdem, Retrahentes tres, superior, medius, inferior.

IN FACIE, Orbiculares Palpebrarum, Corrugatores superciliarum, Compressores narium, Levatores labii superioris alarumque nasi, Levatores labii superioris, Zygomatici minores, Levatores angulorum oris, Zygomatici majores, Depressores angulorum oris, Depressores labii inferioris, Nasales labii superioris, Buccinatores, Orbiculares oris, Depressores alarum nasi, Levatores menti.

IN MALA ET LATERE CALVÆ, Masseter, Temporalis.

IN CAVO OCULI, Levator palpebræ superioris, Obliquus superior oculi, Rectus attollens oculi, Rectus abductor oculi, Rectus adductor oculi, Rectus depressor oculi, Obliquus inferior.

IN

IN AURICULA, Tragicus, Antitragicus, Major helcis, Minor helcis, Transversus Auriculæ.

IN AURE INTERNA, Externus mallei, Laxator tympani, Tensor tympani, Stapedius.

IN COLLO, Latissimi colli, Sterno-mastoidei, Cleido-mastoidei, Coraco-hyoidei, Sterno-hyoidei, Sterno-thyreoides, Hyo-thyreoides, Biventre maxillæ, Stylo-hyoidei, Stylo-hyoidei alteri, Stylo-glossi, Stylo-pharyngei, Mylo-hyoidei, Genio-hyoidei, Cerato-glossi, Basio-glossi, Chondro-glossi, Genio glossi, Linguales, Constrictores pharyngis inferiores, Constrictores pharyngis medii, Constrictores pharyngis superiores, Salpingo-pharyngei, Palato-pharyngei, Constrictores isthmi faucium, Levatores palati molles, Circumflexi palati, Azygus Uvulæ, Crico-thyreoides, Crico-arytænoidei posteriores, Arytænoidei obliqui, Arytænoideus transversus, Crico-arytænoidei laterales, Thyreo-arytænoidei.

SUB MALA, Pterigoideus internus, Pterigoideus externus.

IN PECTORE, Pectorales, Serrati antici, Subclavii.

IN LATERE THORACIS, Serratus magnus.

IN ABDOMINE, Obliqui externi abdominis, Obliqui interni abdominis, Transversi abdominis, Recti abdominis, Pyramidales.

CIRCA FUNEM SPERMATICUM AC TESTEM, Cremaster.

INTER

INTER ABDOMEN THORACEMQUE, Diaphragma.

SUB PECTORE, Triangularis sterni.

IN LUMBORUM ET COXARUM PARTE PRIORE, Psoæ parvi, Psoæ magni, Iliaci interni, Quadrati lumborum.

CIRCA PERINÆUM VIRI, Acceleratores, Erectores penis.

IN GENITALIS MULIEBRIS AMBITU, Constrictores cunni, Erectores clitoridis.

CIRCUM ANUM, Sphincter ani externus, Transversi perinæi, Transversi perinæi alteri, Levatores ani, Coccygei, Curvatores coccygis, Sphincter ani internus. In VIRO etiam Compressores prostatae.

IN DORSO CUM LUMBORUM POSTERIORE PARTE ET CERVICE, Cucullares, Latissimi dorsi, Rhomboidei majores, Rhomboidei minores, Serrati postici superiores, Serrati postici inferiores, Levatores scapularum, Splenii capitis, Splenii colli, Biventre cervicis, Complexi, Trachelo-mastoidei, Transversales cervicis, Cervicales descendentes, Sacro-lumbales cum Longissimis dorsi, Spinales dorsi, Semi-spinales dorsi, Spinales cervicis, Interspinales cervicis, Recti postici majores capitis, Recti postici minores capitis, Obliqui inferiores capitis, Obliqui superiores capitis, Multifidi spinæ, Interspinales Lumborum,

Lumborum, Interspinales dorsi, Intertransversarii lumborum, Intertransversarii dorsi, Levatores costarum breviores, Levatores costarum longiores.

IN SPATIIS INTERCOSTALIBUS, Intercostales externi, Intercostales interni.

IN COLLI Sceleti lateribus parteque priore; Scaleni priores, Scaleni minimi, Scaleni laterales, Scaleni medii, Scaleni postici, Recti interni majores capitis, Longi colli, Recti interni minores capitis, Recti laterales capitis, Intertransversarii colli priores, Intertransversarii colli posteriores.

IN SCAPULA ET HUMERI SUPERIORI PARTE. Deltoides, Supra-spinatus, Infra-spinatus, Teres minor, Teres major, Sub-scapularis.

IN HUMERO, Biceps brachii, Coraco-brachialis, Brachialis internus, Triceps brachii.

IN CUBITO, Supinator longus, Radialis externus longior, Radialis externus brevior, Extensor communis digitorum manus, Extensor proprius digiti minimi manus, Ulnaris externus, Anconeus, Supinator brevis, Abductor longus pollicis manus, Extensor minor pollicis manus, Extensor major pollicis manus, Indicator, Ulnaris internus, Palmaris longus, Radialis internus, Pronator teres, Sublimis, Profundus, Flexor longus pollicis manus, Pronator quadratus.

IN MANU, Lumbricales, Abductor brevis pollicis manus, Opponens pollicis manus, Flexor ^u brevis

264 A LIST of the MUSCLES, &c.

brevis pollicis manus, Adductor pollicis manus, Palmaris brevis, Abductor digiti minimi manus, Flexor parvus digiti minimi manus, Adductor metacarpi digiti minimi, Interossei manus, Abductor indicis.

IN NATE, Gluteus magnus, Gluteus medius, Gluteus minor, Pyriformis, Geminorum superior, Geminorum inferior, Obturator internus, Quadratus Femoris.

IN FEMORE, Biceps cruris, Semi-tendinosus, Semi-membranosus, Tensor vaginæ femoris, Rectus cruris, Sartorius, Vastus externus, Vastus internus, Cruralis, Pectineus, Adductor longus femoris, Gracilis, Adductor brevis femoris, Obturator externus, Adductor magnus femoris.

IN CRURE, Gemellus, Plantaris, Soleus, Popliteus, Flexor longus digitorum pedis, Flexor longus pollicis pedis, Tibialis posticus, Peroneus longus, Peroneus brevis, Extensor longus digitorum pedis, Peroneus tertius, Tibialis anticus, Extensor proprius pollicis pedis.

IN PEDIS EXTREMI DIGITORUMQUE EJUS DORSO, Extensor brevis digitorum pedis.

IN PLANTA ET DIGITORUM PEDIS PARTE INFERIORE, Flexor brevis digitorum pedis, Abductor pollicis pedis, Abductor minimi pedis, Lumbricales pedis, Flexor brevis pollicis, pedis, Adductor pollicis pedis, Transversus pedis, Flexor brevis minimi pedis, Interossei pedis.

F I N I S.

AN
ACCOUNT
OF THE
BLOOD VESSELS
AND
NERVES.

ACCOUNT

OF THE

BLOOD PURIFICATION

AND

RENEWAL

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OF THE BLOOD VESSELS.

THE vessels which carry the blood from the heart to the extremities of the body, are called Arteries, and those which return it to the heart, Veins.

The arteries have three coats; a middle muscular, and an external and internal membranous. The veins are said to have the same; but they are much thinner than those of the arteries, and are not easily separated.

In the inside of the veins, especially in the lower limbs, there are many valves. These valves not only prevent the reflux of the venal blood, which otherwise would have happened from the frequent action of the muscles on the outsides of the veins, but, by this singular contrivance, the blood is actually propelled, or its motion accelerated, by the action of these muscles.

Both the arteries and veins as they run on the inside of the limbs, or are dispersed in parts that suffer great extensions, as the stomach, guts and uterus, are curved so much, that when the parts come to be distended they may comply with those distensions, by only being straightened, and so are preserved from being stretched, which would lessen their diameters.

The small arteries near the heart go off from the large trunks at obtuse angles, farther at less obtuse angles, then at right angles, farther still at acute angles, and near the extremities at very acute angles; by which means the blood in these vessels has the advantage of a more direct course, the farther it moves from the heart.

The small arteries always divide in such a manner that the lesser branches may lie least in the direction of the blood flowing into them, which makes the blood flow most freely into that branch that hath farthest to carry it; and the smaller branches arise more or less obliquely from the sides of other arteries, according to the proportion they bear to the arteries

from which they arise ; because an artery comparatively large arising obliquely from the side of another, would make an orifice in that it arises from too large, and weaken it. Both these ends are at once answered, by making the arteries that give off the branches bend more or less toward the branches they give off, according to the comparative magnitude of the branches given off.

The extreme branches both of the arteries and veins have very numerous communications, like those in the stamina of the leaves of plants, by which communications the blood that is obstructed in any vessels may pass off by other vessels that are not obstructed. It is by means of these communications that the blood circulates in a limb, part of which has been amputated, and into any vessels that have been separated from the trunks that supplied them, which otherwise must have mortified for want of nourishment, and with them all the branches that arise from such separated vessels. To these communications likewise it is owing, that the fluids contained in a large inflammation suppurate into one cavity.

Of the ARTERIES.

The heart throws the blood into two great arteries ; one of which is named Aorta, the other, Arteria Pulmonalis.

The Aorta distributes the blood to all the parts of the body, for the nourishment of the parts, and for the secretion of different fluids.

The Arteria Pulmonalis carries the blood through all the capillary vessels of the lungs.

Both these great or general arteries are subdivided into several branches, and these again into a great number of lesser ramifications.

Of the PULMONARY ARTERY.

The Pulmonary Artery goes out from the right ventricle of the heart ; and its trunk having run almost directly upward as high as the curvature of the Aorta is divided into two lateral branches, one going to the right hand, called the right Pulmonary artery ; the other to the left, termed the left Pulmonary artery. The right artery passes under the curvature of the Aorta, and is consequently longer than the left. They both
run

run to the lungs, and are dispersed through their whole substance by ramifications nearly like those of the Bronchia, and lying in the same directions.

Of the A O R T A in general.

The basis of the heart being very much inclined to the right side, and turned a little backward, the Aorta goes out from it in a direct course, nearly over against the fourth vertebra of the back. Its course is direct with respect to the heart; but with respect to all the rest of the body, it ascends obliquely from the left to the right hand, and from before, backward.

Soon after this it bends obliquely from the right hand to the left, and from before, backwards, reaching as high as the second vertebra of the back; from whence it runs down again in the same direction, forming an oblique arch. The middle of this arch is almost opposite to the right side or edge of the superior portion of the sternum, between the cartilaginous extremities or sternal articulations of the first two ribs.

From thence the Aorta descends in a direct course along the anterior part of the vertebræ, all the way to the Os Sacrum, lying a little toward the left hand, and there it terminates in two subordinate or collateral trunks, called Arteriæ Iliacæ.

General division of the A O R T A.

The Aorta is by anatomists, generally divided into the Aorta ascendens and Aorta descendens, tho' both are but one and the same trunk. It is termed Ascendens, from where it leaves the heart to the extremity of the great curvature or arch. The remaining part of this trunk from the arch to the Os Sacrum, or Bifurcation already mentioned, is named Descendens.

The Aorta descendens is further divided into the superior and inferior portions; the first taking in all that lies above the diaphragm; the other, all that lies between the diaphragm and the bifurcation.

The Aorta ascendens is chiefly distributed to part of the Thorax, and to the head and upper extremities. The superior portion of the Aorta descendens furnishes the rest of the Thorax; the inferior portion furnishes the abdomen and lower extremities.

The great trunk of the Aorta, through its whole length, sends off immediately several branches which are afterwards differently ramified; and these arterial branches may be looked upon as so many trunks with respect to the other ramifications; which again may be considered as small trunks with regard to the ramifications that they send off.

The branches which go out immediately from the Trunk of the Aorta, may be termed original or capital branches; and of these, some are large, and others very small.

The large capital branches of the Aorta are these; two *Arteriæ Subclaviæ*: two *Carotides*, one *Cæliaca*, one *Mesenterica superior*, two *Renales*, formerly termed *Emulgentes*, one *Mesenterica inferior*, and two *Iliacæ*.

The small capital branches are chiefly the *Arteriæ Coronariæ cordis*, *Bronchiales*, *Oesophagææ*, *Intercostales*, *Diaphragmaticæ inferiores*, *Spermaticæ*, *Lumbares* and *sacræ*.

These capital branches or arteries are for the most part disposed in pairs, there being none in odd numbers but the *Cæliaca*, the two *Mesentericæ*, some of the *Oesophagææ*, the *Bronchiales*, and sometimes the *Sacræ*.

The ramifications of each capital branch are in uneven numbers with respect to their particular trunks; but with respect to the ramifications of the like capital trunks on the other side, they are disposed in pairs. Among the branches there are in odd numbers none but the *Arteria Sacra* when it is single, and the *Oesophagææ*, the ramifications of which are sometimes found in pairs.

Before we enter upon the detail of each of these particular arteries, many of which have proper names; it will be convenient to give a short view of the disposition and distribution of the principal arterial branches, as a general plan to which all the particularities of each distribution may afterwards be referred: for it is found by experience, that the common method of describing the course of all the ramifications of these vessels, without having first given a general idea of the principal branches, is very troublesome to beginners.

General Distribution of the Branches of the AORTA.

The Aorta gives rise to two small Arteries, called *Coronariæ Cordis*, which go to the heart and its auricles; one of which

is situated anteriorly, the other posteriorly, and sometimes they are three in number.

From the upper part of the arch or curvature, the Aorta sends out commonly three, sometimes four large capital branches, their origins being very near each other. When there are four, the two middle branches are termed *Arteriæ Carotides*; the other two, *Subclaviæ*; and both are distinguished into right and left.

When there are but three branches, which is ofteneft the case, the first is a short trunk, common to the right Subclavian, and Carotid; the second is the left Subclavian, and the third the left Carotid. Sometimes, though very rarely, these four arteries unite in two trunks.

The origin of the left Subclavian terminates the Aorta ascendens; but sometimes there are four branches, the first three of which are those already mentioned, and the fourth a distinct trunk of the left vertebral artery.

It must be observed, that these large Branches which arise from the curvature of the Aorta, are situated obliquely; the first, or that which is most on the right hand, lying more forward than the rest, and the last, which is most on the left hand, more backward. The first and second or middle branches, are generally in the middle of the arch, and the third lower down. Sometimes the first alone is in the middle; all which varieties depend on the obliquity of the arch.

The Carotid Arteries run up directly to the head, each of them being first divided into two, one external the other internal. The external Artery goes chiefly to the outer parts of the head and dura mater or first covering of the brain. The internal enters the Cranium, through the bony canal of the *Os Petrosum*; and is distributed through the brain by a great number of ramifications.

The Subclavian Arteries separate laterally and almost transversely, each toward that side on which it lies, behind and under the *Claviculæ*, from whence they have their name.—The left seems to be shorter and runs more obliquely than the right.

The Subclavian on each side terminates at the upper edge of the first Rib, between the lower insertions of the first *Scalenus*

lenus Muscle; and there, as it goes out of the Thorax, takes the name of *Arteria Axillaris*.

During this course of the Subclavian Artery, taking in the common trunk of the right Subclavian, several Arteries arise from it, *viz.* the *Mammaria Interna*, *Mediastina*, *Pericardia*, *Diaphragmatica minor* five superior, *Thymica* and *Trachealis*.

The *Thymica* and *Trachealis* on each side are in some subjects only branches of one small trunk, which springs from the common trunk of the right Subclavian and Carotid.

They are generally small arteries which run sometimes separate, and sometimes partly separate and partly joined.

The Subclavian sends off likewise the *Mammaria Interna*, *Vertebrales Cervicales*, and sometimes several of the upper *Intercostales*.

The Axillary Artery which is only a continuation of the Subclavian, from where it goes out of the Thorax, to the Axilla, detaches chiefly the *Mammaria externa* or *Thoracica superior*, *Thoracica inferior*, *Scapulares externæ*, *Scapularis interna*, *Humeralis* or *Muscularis*, &c. Afterwards it is continued by different ramifications and under different names, over the whole arm, all the way to the ends of the fingers.

The superior portion of the *Aorta descendens* gives off the *Arteriæ bronchiales*, which arise sometimes by a small common trunk, sometimes separate, and sometimes do not come immediately from the Aorta. It next sends off the *Oesophagææ*, which may be looked upon as *Mediastinæ posteriores*; and then the *Intercostales* from its posterior part, which in some subjects come all from this portion of the Aorta, in others only the lowest eight or nine.

The small anterior arteries here mentioned are generally at their origins, single and in uneven numbers, but they divide soon after, toward the right and left.

The inferior portion of the descending Aorta, as it passes through the diaphragm, gives off the *Diaphragmaticæ inferiores* or *phrenicæ*, which however do not always come immediately from the Aorta. Afterwards it sends off several branches anteriorly, posteriorly and laterally.

The anterior branches are the *Cæliaca* which supplies the stomach, liver, spleen, pancreas, &c. the *Mesenterica superior* which

which goes chiefly to the mesentery, to the small intestines, and that part of the great intestines, which lies on the right side of the abdomen; the Mesenterica inferior, which goes to the great intestines on the left side, and produces the Hemorrhoidalis interna; and lastly, the right and left Arteriæ spermaticæ.

The posterior branches are the Arteriæ lumbares, of which there are several pairs, and the Sacræ, which do not always come from the trunk of the Aorta.

The lateral branches are the Capsulares and Adiposæ, the origin of which often varies; the Renales formerly termed Emulgentes, and the Iliacæ which terminate the Aorta by the bifurcation already mentioned.

The Iliac artery on each side, is commonly divided into the external or anterior, and internal or posterior.

The internal Iliaca is likewise named Arteria Hypogastrica; and its ramifications are distributed to the viscera contained in the Pelvis, and to the neighbouring parts, both internal and external.

The Iliaca Externa, which is the true continuation of the Iliac Trunk, and alone deserves that name, goes on to the Inguen, and then out of the Abdomen, under the Ligamentum Fallopii; having first detached the Epigastrica which goes to the Musculi Abdominis Recti. Having quitted the Abdomen, it commences Arteria Cruralis, which runs down upon the thigh, and is distributed by many branches and ramifications to all the lower extremity.

We shall now go on to examine particularly all the capital or original branches of the Aorta, from their origin, to the entry of them and of their ramifications into all the parts of the body, and all the different viscera and organs.

Arteriæ Cardiacæ sive Coronariæ Cordis.

The cardiac or coronary arteries of the heart, arise from the Aorta immediately on its leaving the heart. They are two in number, and according to the natural situation of the heart, one is rather superior than anterior, the other rather inferior than posterior.

They go out near the two sides of the pulmonary artery, which having first surrounded, they afterward run upon the basis of the heart in form of a kind of crown or garland, from

from whence they are called *Coronariæ*; and then pursue the superficial traces of the union of the two ventricles, from the basis of the heart to the apex.

They send communicating branches to each other, which are afterward lost in the substance of the heart.

We sometimes meet with a third coronary artery which arises from the Aorta more backward, and is spent on the posterior or lower side of the heart.

The *Arteriæ Carotides* in general.

The Carotid arteries are commonly demonstrated after the Subclavian; but it is better to describe them first, that we may afterwards be able to pursue the arteries of the Thorax arising partly from the Subclaviæ and partly from the Aorta descendens, without interruption.

These arteries are two in number, one called the right Carotid, the other the left. They arise near each other, from the curvature or arch of the Aorta; the left immediately; the right most commonly from the trunk of the Subclavia on the same side, as has been already observed.

They run upon each side of the Trachea Arteria, between it and the internal jugular vein, as high as the Larynx, without any ramification. During this course, therefore, they may be named Carotid trunks or general, common and original Carotids. Each of these trunks is afterwards ramified in the following manner.

The trunk having reached as high as the Larynx, is divided into two large branches or particular Carotids, one named External, the other Internal, because the first goes chiefly to the external parts of the head, the second enters the Cranium and is distributed to the brain.

The external Carotid is anterior, the internal, posterior; and the external is even situated more inward and nearer the Larynx than the other; but the common names may still be retained, as being taken not from their situation, but from their distribution.

ARTERIA CAROTIS EXTERNA.

The external Carotid is the smallest, and yet appears by its direction to be a continuation of the common trunk. It runs insensibly outward, between the external angle of the lower jaw, and the parotid gland, which it supplies as it passes. Afterwards

terwards it ascends on the foreside of the ear, and ends in the temples.

In this course it sends off several branches which may well enough be divided into anterior or internal, and posterior or external; and the principal branches of each kind are these.

The first anterior or internal branch goes out from the very origin of the Carotid on the inside; and having presently afterward taken a little turn, and sent off branches to the jugular glands near it, to the fat and skin; it runs transversely, and is distributed to the Glandulæ Thyroidæ, and to the muscles and other parts of the Larynx: for which reason it may be named Laryngæa or Gutturalis superior. It likewise sends some branches to the Pharynx and muscles of the Os Hyoides.

The second anterior branch passes over the nearest cornu of the Os Hyoides, to the muscles of that bone and of the tongue; and to the Glandulæ sublinguales; afterwards passing before the cornu of the Os Hyoides, it loses itself in the tongue, from whence it has been called Arteria sublingualis; and is the same artery which others have named Ranina.

The third branch or Arteria Maxillaris inferior goes to the maxillary gland, to the styloide and mastoide muscles, to the parotid and sublingual glands, to the muscles of the Pharynx, and to the small Flexors of the head.

The fourth branch, which we name Arteria Maxillaris externa, passes anteriorly on the masseter muscle, and middle of the lower jaw near the chin, from whence it has a denomination in some languages, which cannot be expressed in English. Afterwards it runs under the Musculus Triangularis Labiorum, which it supplies as well as the Buccinator and the Quadratus Menti.

It sends off a particular branch, very much contorted, which divides at the angular commissure of the lips, and running in the same manner along the superior and inferior portions of the Musculus orbicularis, it communicates on both sides with its fellow, and thereby forms a kind of Arteria Coronaria Labiorum.

Afterwards it ascends towards the Nares, and is distributed to the muscles, cartilages and other parts of the nose, sending down some twigs, which communicate with the coronary artery

tery of the lips. Lastly, it reaches the great angle of the eye, and is ramified and lost on the *Musculus Orbicularis Palpebrarum*, *Superciliaris* and *Frontalis*. Through all this course, it is named *Arteria Angularis*.

The fifth branch arises over-against the Condyle of the lower jaw, and as it is very considerable, it may be called *Maxillaris Interna*. It passes behind the Condyle, and having given off a twig among the *Musculi Pterygoidæi*; it is divided into three principal branches.

The first branch goes through the inferior Orbital or sphenomaxillary fissure to the orbit, after having supplied the *Musculi Peristaphylini*, and the glandulous membrane of the posterior Nares, through the *Foramen Spheno-Palatinum*. We name this branch *Spheno-Maxillaris*.

It is distributed inferiorly and laterally to the parts contained in the orbit, and detaches a small subaltern branch through the extremity of the superior orbital or sphenoidal fissure, which enters the Cranium, and is spent upon the *Dura Mater*, communicating there with the other artery of the *Dura Mater*, which enters by the *Foramen Spinale* of the sphenoidal bone.

It sends off likewise another subaltern branch, which passes through the posterior opening of the orbital canal, and having furnished the maxillary sinus and the teeth, goes out by the inferior orbital hole, and on the cheek communicates with the angular artery.

The second of the three branches runs through the canal of the lower jaw, and being distributed to the *Alveoli* and teeth, goes out at the hole near the chin, and loses itself in the neighbouring muscles, communicating with the *Rami* of the *Arteria Maxillaris externa*.

The third branch of the *Maxillaris interna* runs up between the internal and external Carotids, passes through the *Foramen Spinale* of the sphenoidal bone, and is distributed to the *Dura Mater* by several ramifications which run forward, upward and backward; the uppermost communicating with those on the other side, above the longitudinal sinus of the *Dura Mater*.

This artery is of the *Dura Mater* which may be termed *Spheno-spinalis*, to distinguish it from those that go to the same

same part by another course, arises sometimes from the trunk of the external Carotid, behind the origin of the Laryngæa or Gutturales superior, and sometimes from the first ramus of the Maxillaris interna, just before it enters the Spheno maxillary fissure.

The sixth anterior or internal branch, which is very small, is spent on the Musculus Masseter.

The first external or posterior branch is named Arteria Occipitalis. It passes obliquely before the internal jugular vein, and having twigs to the Musculus Stylo-Hyoidæus, Stylo-Glossus and Digastricus, it runs between the styloide and mastoide apophyses, along the mastoide groove, and goes to the muscles and integuments which cover the Os Occipitis, turning several times in an undulating manner as it ascends backward.

It communicates by a descending branch with the vertebral and cervical arteries, as has been already said; near the top of the head, it communicates likewise with the posterior branches of the temporal artery, and it sends a branch to the Foramen Mastoidæum.

The second external branch spreads itself on the outward ear, by a great many small twigs on each side, several of which run inward, and furnish the cartilages, Meatus Auditorius, skin of the Tympanum and internal ear.

The trunk of the external Carotid ascends afterward above the Zygoma, passing between the angle of the lower jaw and Parotid Gland, and forms the temporal artery, which divides into an anterior, middle and posterior branch.

The anterior branch of the temporal artery goes to the Musculus Frontalis, communicates with the Arteria Angularis, and sometimes gives off a very small artery, which pierces the internal apophysis of the Os Malæ all the way to the orbit. The middle branch goes partly to the Musculus Frontalis, partly to the Occipitalis. The posterior branch goes to the Occiput, and communicates with the Arteria Occipitalis. All these branches likewise furnish the integuments.

ARTERIA CAROTIS INTERNA.

The internal carotid artery leaving the general trunk, is at first a little incurvated, appearing as if either it were the only branch

branch of that trunk, or a branch of the trunk of the external Carotid. Sometimes the curvature is turned a little outward, and then more or less inward, passing behind the neighbouring external Carotid.

It is situated a little more backward than the Carotis Externa, and generally runs up without any ramification, as high as the lower orifice of the great canal of the Apophysis Petrosa of the Os Temporis. It enters this orifice directly from below upward, and afterward makes an angle according to the direction of the canal, the rest of which it passes horizontally being covered by a production of the Dura Mater.

At the end of this canal it is again incurvated from below upward, and enters the Cranium through a notch of the sphenoidal bone. Then it bends from behind, forward, and makes a third angle on the side of the Sella Sphenoidalis; and again a fourth, under the clinoid apophysis of that Sella.

As it leaves the bony canal to enter the Cranium, it sends off a branch through the sphenoidal fissure to the orbit and eye; and soon afterward, another, through the Foramen Opticum, by which it communicates with the external Carotid.

Afterwards the internal Carotid runs under the basis of the brain to the side of the Infundibulum, where it is at a small distance from the internal Carotid of the other side, and there it commonly divides into two principal branches, one anterior, and one posterior.

The anterior branch runs forward under the brain, first separating from that on the other side; then coming nearer again, it unites with it by an anastomosis or communication in the interstice between the olfactory nerves. Afterwards having sent off some small arteries, which accompany these nerves, it leaves its fellow, and divides into two or three branches.

The first of these branches goes to the anterior lobe of the brain; the second, which is sometimes double, is inverted on the Corpus Callosum, to which it gives some ramifications, as also to the Falx of the Dura mater, and middle lobe of the brain. The third which in some subjects is a distinct branch, in others only a division of the second, goes to the posterior lobe of the brain. This might be looked upon as a third principal branch lying between the other two.

The

The posterior branch communicates first of all with the vertebral artery of the same side, and then divides into several rami which run between the superficial circumvolutions of the brain; and are ramified in many different directions on and between these circumvolutions, all the way to the bottom of the Sulci.

All these ramifications are covered by the Pia Mater, in the duplicature of which they are distributed, and form capillary reticular textures in great numbers; and afterwards they are lost in the inner substance of the brain. The anterior and middle branches produce the same kind of ramifications; and the anterior, in particular, sends a twig to the Corpus Callosum.

ARTERIA SUBCLAVIA.

The subclavian Arteries are named from their situation near the Claviculæ, in the transverse direction of which they run. They are two in number, one right, the other left; and they arise from the arch of the Aorta, on each side of the left Carotid, which commonly lies in the middle between them; but when both Carotids go out separately, they both lie between the Subclaviæ. These arteries terminate, or rather change their name, above the middle of the two first ribs, between the anterior insertions of the Musculi Scalenii.

The right Subclavian is larger at the beginning, than the left, when it produces the right Carotid; its origin is likewise more interior and higher, because of the obliquity of the arch of the Aorta; for which reason also the left is shorter than the right, and runs more obliquely. Both of them are distributed much in the same manner; and therefore the description of one may likewise be applied to the other.

The right Subclavian, the longest of the two, gives off, first of all, small arteries to the Mediastinum, Thymus, Pericardium, Aspera Arteria, &c. which are named Mediastinæ, Thymicæ, Pericardiæ, and Trachealis. These small arteries sometimes go out from the Subclavian itself, either separately or by small common trunks; sometimes

they are branches of the *Mammaria interna*, especially the *Mediaſtina*.

Afterward this right Subclavian, at about a finger's breadth from its origin, often produces the common Carotid of the ſame ſide; and at a ſmall finger's breadth from the Carotid, it gives off commonly three conſiderable branches, viz. the *Mammaria interna*, *Cervicalis*, and *Vertebralis*, and ſometimes an intercoſtal artery which goes to the firſt ribs called *Intercoſtalis ſuperior*.

ARTERIA THYMICA.

The *Arteria Thymica* communicates with the *Mammaria interna*, and ſometimes ariſes from the anterior middle part of the common trunk of the Subclavian and Carotid. The *Thymus* receives likewise ſome rami from the *Mammaria interna*, and *Intercoſtales ſuperior*. The ſame obſervation may be applied to the *Mediaſtina* and *Pericardia*.

ARTERIA PERICARDIA.

The *Pericardia* ariſes much in the ſame manner with the *Thymica*, and runs down upon the *Pericardium* all the way to the *Diaphragm*, to which it ſends ſome ſmall ramifications.

ARTERIA MEDIASTINA.

The *Mediaſtina* ariſes ſometimes immediately after the *Thymica*, and is diſtributed principally to the *Mediaſtinum*.

ARTERIA TRACHEALIS.

The *Trachealis*, which may likewise be named *Gutturalis inferior*, runs up from the Subclavi, in a winding courſe, along the *Aſpera Arteria*, to the *Glandulæ Thyroidææ*, and *Larynx*, detaching ſmall arteries to both ſides, one of which runs to the upper part of the *Scapula*.

ARTERIA MAMMARIA INTERNA.

The internal Mammary Artery comes from the anterior and lower ſide of the Subclavia, near the middle of the *Clavicula*, and runs down for about one finger's breadth, behind

behind the cartilages of the true ribs, an inch distant from the Sternum.

In its passage it sends rami to the Thymus, Mediastinum, Pericardium, Pleura, and intercostal muscles. It likewise detaches other branches, through these muscles, and between the cartilages of the ribs, to the Pectoralis major, and other neighbouring muscular portions, to the Mammæ, Membrana Adiposa and skin.

Several of these rami communicate by anastomoses, with the Mammaria externa, and other arteries of the Thorax, especially in the substance of the Pectoralis Major, and likewise with the Intercostales. Afterwards it goes out of the Thorax on one side of the Appendix Ensisformis, and is lost in the Musculus Abdominis Rectus, a little below its upper part; communicating at this place, by several small ramifications with the Arteria Epigastrica; and in its course, it gives branches to the Peritonæum, and to the anterior parts of the oblique and transverse muscles of the Abdomen.

ARTERIA CERVICALIS.

The Cervical Artery arises from the upper side of the Subclavian, and is presently afterward divided into two, which come out sometimes separately, sometimes by a small common trunk. The largest of these two arteries is anterior, the other posterior.

The Anterior Cervicalis, running behind the Carotid of the same side, is distributed to the Musculus Coraco-Hyoidæus, Mastoidæus, Cutaneus, Sterno-Hyoidæus, and Sterno-Thyroidæus, to the jugular glands, the Aspera Arteria, the muscles of the Pharynx, Bronchia, Oesophagus and to the anterior muscles which move the neck and head. This artery has been observed to send out the Intercostalis superior.

The posterior Cervicalis arises sometime a little after the Vertebralis, and sometimes from that artery. It passes under the transverse apophysis of the last Vertebra of the Neck; and sometimes through a particular hole in that apophysis; and from thence runs up backward in a winding course, on the vertebral muscles of the neck, and then returns in the same manner.

It communicates with a descending branch of the occipital artery, and with another of the vertebral artery above the second Vertebra. It is distributed to the Musculi Scalenii, Angularis Scapulæ, and Trapezius, and to the jugular glands and integuments.

ARTERIA VERTEBRALIS.

The Vertebral artery goes out from the posterior and upper side of the Subclavian, almost opposite to the Mammilla Interna and Cervicalis. It runs up through all the holes in the transverse apophyses of the Vertebra of the neck, and in its passage sends off little twigs through the lateral notches of these Vertebrae, to the Medulla Spinalis and its coverings. It also gives arteries to the vertebral muscles, and to other muscles near them.

As it passes through the transverse hole of the second Vertebra, it is generally incurvated, to accommodate itself to the particular obliquity of this Foramen. And between this hole and that in the first Vertebra, it takes another larger turn in a contrary direction to the former. Having passed the transverse hole of the first Vertebra, it is considerably incurvated a third time, from before backwards, as it goes through the superior and posterior notch in this Vertebra.

At this third curvature, it sends off a small branch which is ramified on the outer and posterior parts of the Occiput, and communicates with the cervical and occipital arteries. Having afterwards reached the great Foramen of the Os Occipitis, it enters the Cranium and pierces the Dura Mater; and on these accounts it may be named Arteria Occipitalis posterior, to distinguish it from the other which is lateral.

As soon as it enters the Cranium, it sends several small ramifications to the back part of the Medulla Oblongata, and to the Corpora Olivaria and Pyramidalia, which are likewise spread on the back sides of the fourth ventricle of the brain, and form the Plexus Choroides of the Cerebellum.

Afterwards it advances on the Apophysis Basilaris of the Os Occipitis, inclining by small degrees toward the vertebral

bral artery of the other side, all the way to the extremity of that apophysis, where they both join in one common trunk, which may be named *Arteria Basilaris*.

ARTERIA BASILARIS.

The *Arteria Basilaris* runs forward under the great transverse protuberance of the *Medulla oblongata*, to which it gives ramifications, as well as to the neighbouring parts of the *Medulla*. Sometimes this artery divides again near the extremity of the *Apophysis Basilaris* into two lateral branches, which communicate with the posterior branches of the two internal *Carotides*, and are lost in the posterior lobe of the brain.

ARTERIE SPINALES.

The *Spinal Arteries* are two in number, one anterior and one posterior; both produced by both *Vertebrales*, each of which, as soon as it enters the *Cranium*, sends out a small branch, by the union of which, the posterior *Spinalis* is formed. Afterwards the *Vertebralis* advancing on the *Apophysis Basilaris* or production of the *Occipital bone*, detach backward two other small branches, which likewise meet, and by their union form the *Spinalis anterior*. These spinal arteries run down on the fore and back sides of the *Medulla Spinalis*, and by small transverse ramifications, communicate with those which the intercostal and lumbar arteries send to the same part.

ARTERIA AUDITORIA INTERNA.

The *Internal Auditory Artery* goes off from each side of the *Arteria Basilaris*, to the organ of hearing, accompanying the auditory nerve, having first furnished several small twigs to the *Membrana Arachnoides*.

ARTERIA MENINGÆA posterior.

The posterior *Meningæa* arises from the same trunk with the *Auditoria Interna*, and goes to the back part of the *Dura Mater*, on the occipital and temporal bones, and likewise supplies the neighbouring lobes of the brain.

ARTERIA INTERCOSTALIS superior.

When the superior Intercostal Artery does not go out from the trunk of the Aorta descendens, it commonly arises from the lower side of the Subclavian, and runs down on the inside of the two, three or four uppermost true ribs, near their heads, and sends off under each rib, a branch which runs along the lower edge, and supplies the intercostal muscles and neighbouring parts of the Pleura.

These branches or particular intercostal arteries communicate with each other at different distances by small Rami, which run upward and downward from one to the other, on the intercostal muscles.

They likewise give branches to the Musculi Sterno-Hyoidæi, Subclavius, Vertebrales, and bodies of the Vertebrae; and also to the Pectoralis major and minor, piercing the intercostal muscles; and lastly, they send branches through the notches of the first four Vertebrae to the Medulla Spinalis and its coverings.

Sometimes the superior common intercostal artery comes from the Cervicalis, and not immediately from the Subclavia. Sometimes it arises from the Aorta descendens, either by small separate arteries or by a common trunk, which divides as it runs obliquely up upon the ribs. Lastly, it sometimes arises from the nearest Bronchialis, or from several Bronchiales together.

Ductus Arteriosus in Liagamentum versus.

The Ductus Arteriosus, which is found only in the fœtus and in very young children, arises from the Aorta descendens, immediately below the left Subclavian artery. In adults, this duct is shrunk up and closed, and appears only like a short ligament adhering by one end to the Aorta, and by the other to the Pulmonary artery, so that in reality it deserves no other name than that of Ligamentum Arteriosum.

ARTERIA BRONCHIALIS.

The Bronchial arteries go sometimes from the fore-side of the superior descending Aorta, sometimes from the first
In-

Intercostal, and sometimes from the Arteria Oesophagæa. Sometimes they arise separately from each side, to go to each lung, and sometimes by a small common trunk, which afterwards separates towards the right and left hand, at the Bifurcation of the Aspera Arteria, and accompany the ramifications of the Bronchia.

The Bronchial artery on the left side often comes from the Aorta, while the other arises from the superior Intercostal on the same side, which variety is owing to the situation of the Aorta. Sometimes there is another Bronchial artery which goes out from the Aorta posteriorly, near the superior Intercostal, above the Bronchialis anterior.

The anastomoses or communications between the Bronchial artery and the neighbouring vessels, especially those with the Pulmonary vein, the Vena azygos, &c. are very numerous, and deserve particular attention.

The Bronchialis gives a small branch to the neighbouring auricle of the heart, which communicates with the Arteria Coronaria.

ARTERIE OESOPHAGÆÆ.

The Oesophagææ are generally two or three in number, sometimes but one. They arise anteriorly from the Aorta descendens, and are distributed to the Oesophagus, &c. Sometimes the uppermost Oesophagæa produces a Bronchial artery.

ARTERIE INTERCOSTALES INFERIORES.

The inferior Intercostals are commonly seven or eight on each side, and sometimes ten, when the superior Intercostals arise likewise from the Aorta descendens; in which case these run obliquely upward, as has been already said.

They arise along the backside of the descending Aorta in pairs, all the way to the diaphragm, and run transversely toward each side, on the bodies of the Vertebrae. Those on the right side pass behind the Vena Azygos; and afterwards they all run to the Intercostal muscles, along the lower edge of the ribs, all the way to the Sternum or near it.

They send branches to the Plura, to the Vertebral muscles, to those muscles which lie on the outsides of the ribs,
and

and to the upper portions of the muscles of the Abdomen; and they communicate with the Arteriæ Epigastricæ and Lumbares.

Sometimes, instead of going out from the Aorta in pairs, they arise by small common trunks, which afterwards divide, and send an artery to each neighbouring rib.

Before they take their course along the ribs, each of them detaches one branch between the transverse apophyses on both sides, to the Vertebral muscles, and another which enters the great canal of the Spina Dorsæ. Each of these latter branches divides at least into two small arteries, one of which runs transversely on the anterior side of the canal, the other on the posterior side. Both of them communicate with the like arteries from the other side of the Spine, in such a manner, as to form a kind of arterial rings, which likewise communicate with each other by other small ramifications. The same is to be observed in the Arteriæ Lumbares.

Afterwards each Intercoastal artery having reached the middle of the rib or a little more, divides into two principal branches, one internal, the other external. Soon after this division, the arteries that run upon the false ribs, separate a little from them, being gradually bent downward one after another, and are spread upon the Abdominal muscles. They are likewise distributed to other neighbouring muscles, and particularly to those of the diaphragm, almost in the same manner with the Arteriæ Phrenicæ. They also communicate with the Lumbares, and sometimes with branches of the Hypogastricæ.

ARTERIÆ AXILLARES.

The Subclavian artery having left the Thorax immediately above the first rib, in the Interstice left between the portions of the Scalenus, there receives the name of Axillaris, because it passes under the Axilla.

In this course it gives off from its inside, a small branch to the inside of the first rib; and afterwards, four or five principal branches, viz. The Thoracica superior or Mammaria externa, Thoracica inferior, Muscularis or Scapularis externa, Scapularis interna, and Humeralis.

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ARTERIA THORACICA Superior.

The superior Thoracica or external mammary artery, runs down in a winding course on the lateral parts of the Thorax, and crosses the ribs. It gives branches to the two pectoral muscles, to the Mamma, Musculus Subclavius, Serratus Major, Latissimus Dorsi, and to the upper portions of the Coraco-Brachialis and Biceps.

These branches are sometimes separate for some space; and one of them in particular runs down between the Deltoides and Pectoralis Major, together with the Vena Cephalica to which it adheres very closely, the extremity of it piercing the coat of that vein, as if there were an anastomosis between them. Another sometimes runs between the Musculus Brachiiæus and Anconæus internus, which communicates with a branch of the radial artery.

ARTERIA THORACICA Inferior.

The inferior Thoracic Artery runs along the inferior Costa of the Scapula, to the Musculus Subscapularis, Teres major and minor, Infra Spinatus Latissimus Dorsi, Serratus major, and the neighbouring intercostal muscles, communicating with the Arteriæ Scapulares.

ARTERIÆ SCAPULARES.

The external Scapular Artery passes through the notch in the superior Costa of the Scapula, to the Musculus Supra-spinatus and Infra-spinatus, Teres major and minor, and to the Articulation of the Scapula with the Os Humeri.

The internal Scapularis arises from the axillary artery near the Axilla, and runs backward, to be distributed to the Subscapularis, giving branches to the Serratus Major, to the axillary glands, and to the Teres major, upon which it is ramified in different manners. It likewise sends rami to the Infra-spinatus and upper portion of the Anconæi.

ARTERIA HUMERALIS.

The Humeral Artery arises from the lower and fore-side of the Axillaris, and runs backward between the head of the
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the Os Humeri and Teres major, surrounding the articulation, till it reaches the posterior part of the Deltoides to which it is distributed.

During this course, it gives several branches to the superior portions of the Anconæi, to the capsular ligament of the joint of the shoulder, and to the Os Humeri itself, through several holes immediately below the great tuberosity of the head of that bone. It likewise communicates with the scapulary artery.

Opposite to the origin of this humeral artery, the Axillares send off another small branch, which runs in a contrary direction between the head of the Os Humeri and the common upper part of the Biceps and Coraco-Brachialis; and having given branches to the Vagina and channel of the Biceps, and to the Periosteum, afterwards joins the principal Humeralis.

ARTERIA BRACHIALIS.

The axillary artery having given off these branches, passes immediately behind the tendon of the Pectoralis major, where it changes its former name for that of Arteria Brachialis. It runs down on the inside of the arm over the Musculus Coraco-Brachialis, and Anconæus internus, and along the inner edge of the Biceps behind the Vena Basilica, giving small branches on both sides to the neighbouring muscles, to the Periosteum, and to the bone.

Between the Axilla and middle of the arm it is covered only by the skin and fat; but afterwards it is hid under the Biceps, and runs obliquely forward as it descends, being at some distance from the internal condyle; but it does not reach the middle of the fold of the arm.

Between the Axilla and this place, it sends off many branches to the Infra-spinatus, Teres major and minor, Subscapularis, Latissimus Dorsi, Serratus major, and other neighbouring muscles, to the common integuments and even to the nerves. Below the fold of the arm, it divides into two principal branches, one called Arteria Cubitalis, the other Radialis.

From its upper and inner part it sends off a particular branch, which runs obliquely downward and backward over
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the Anconæi, and then turns forward again near the external condyle, where it communicates with a branch of the Arteria Radialis.

Immediately below the insertion of the Teres major, it gives off another branch, which runs from within outwards, and from behind forward, round the Os Humeri; and descends obliquely forward between the Musculus Brachæus, and Anconæus externus, to both which it is distributed in its passage. Having afterwards reached the external condyle, it unites with the branch last mentioned, and likewise communicates with a branch of the arteries of the fore-arm, so that there is here a triple anastomosis.

About the breadth of a finger below this second branch, the brachial artery sends off a third, which runs down toward the internal condyle, and communicates with other branches of the arteries of the fore-arm, as we shall see hereafter.

About the middle of the arm, or a little lower, much about the place where the brachial artery begins to be covered by the Biceps; it sends off a branch, which is distributed to the Periosteum, and penetrates the bone between the Musculus Brachæus and Anconæus internus.

About an inch lower, it gives off another branch, which having furnished ramifications to the Anconæus internus, runs over the inner condyle, and likewise communicates with branches of the arteries of the fore-arm.

Having got below the middle of the arm, the brachial artery detaches another branch which runs behind the inner condyle in company with a considerable nerve; and having passed over the muscles inserted in this condyle, it communicates with that branch of the cubital artery, which encompasses the fold of the arm.

A little lower, it sometimes sends out another branch which passes on the fore-side of the inner condyle, and then communicates with a branch which runs up from the cubital artery. These three communicating branches are termed Collateral Arteries.

The common trunk of the Brachial Artery having reached the fold of the arm, runs together with a vein and
a nerve

a nerve immediately under the Aponeurosis of the Biceps, and passes under the Vena Mediana, detaching branches on each side to the neighbouring muscles.

About a large finger's breadth beyond the fold of the arm, this artery divides into two principal branches, one inner or posterior, named Cubitalis; the other outer or anterior, named Radialis, as has been already said.

From this bifurcation, the brachial artery sends branches on each side, to the Supinator Longus, Pronator Teres, fat and skin. It sometimes tho' very rarely happens, that this artery is divided from its origin into two large branches, which run down on the arm, and afterwards on the forearm, where they have the names of Cubitalis and Radialis,

ARTERIA CUBITALIS-

The Cubital Artery sinks in between the Ulna, and the upper parts of the Pronator Teres, Perforatus, Ulnaris Gracilis, and Radialis internus; then leaving the bone, it runs down between the Perforatus and Ulnaris internus, all the way to the Carpus and great transverse ligament. In this course it winds and turns several ways, and sends out several branches.

The first is a small artery which runs inward to the inner condyle, and then turns upward like a kind of recurrent, to communicate by several branches with the collateral arteries of the arm already mentioned, and particularly with the third. A little lower down, another small branch goes off, which having run upward a little way, and almost surrounded the articulation, communicates with the second collateral artery of the arm, between the Olecranon and inner condyle.

Afterwards the Cubital Artery having in its course between the heads of the Ulna and Radius, reached the interosseous ligament, sends off two principal branches, one internal, the other external, which we call the Interosseous Arteries of the fore-arm.

The external artery pierces the ligament about three fingers breadth below the articulation; and presently afterwards gives off a branch, which runs up like a recurrent

toward the external condyle of the Os Humeri under the Ulnaris externus, and Anconæus minimus, to which it is distributed, as also to the Supinator brevis; and it communicates with the collateral arteries of the arm on the same side.

Afterward this external interosseous artery runs down on the outside of the ligament, and is distributed on the Ulnaris externus, Extensor Digitorum communis, and to the Extensores Pollicis, Indicis and Minimi Digiti; communicating with some branches of the internal interosseous artery.

Having reached the lower extremity of the Ulna, it unites with a branch of the internal interosseous artery, which at this place runs from within outward; and is distributed together with it on the convex side of the Carpus and back of the hand; communicating with the Arteria Radialis and with a branch of the Cubitalis which will be mentioned hereafter.

By these communications, this artery forms a sort of irregular arch, from whence branches are detached to the external interosseous muscles, and to the external lateral parts of the fingers.

The internal interosseous artery runs down very close to the ligament, till it reaches below the Pronator Teres, between which and the Pronator Quadratus, it perforates the ligament, and goes to the convex side of the Carpus and back of the hand, where it communicates with the external interosseous artery, with the Radialis and internal branches of the Cubitalis.

From the origin of the two Interossæ, the cubital artery runs down between the Perforatus, Perforans, and Ulnaris Internus, along the Ulna sending branches to the neighbouring parts. Below the internal Interossæ, it sometimes sends off a branch which runs down between the Flexor Pollicis, Radialis Internus and Perforatus, to which it is distributed all the way to the Carpus, where it runs under the internal annular ligament, and communicates on the hand with branches of the Arteria Radialis.

Afterward the cubital Artery passes over the internal transverse ligament of the Carpus, by the side of the Os

Pisiforme, and having furnished the skin, *Palmaris brevis* and *Metacarpus*, it slips under the *Aponeurosis Palmaris*, giving off one branch to the *hypothenar Minimi Digiti*, and another which runs towards the thumb between the tendons of the flexors of the fingers, and the bases of the metacarpal bones.

It likewise sends off a branch, which running between the third and fourth bones of the *Metacarpus*, reaches to the back of the hand, where it communicates with the *interosseous external artery*. Afterwards having supplied the *interosseous muscles*, it communicates with the *Radialis*; and they both form an arterial arch in the hollow of the hand in the following manner:

The *Cubitalis* having got about two fingers breadth beyond the internal annular ligament of the *Carpus*, forms an arch, the convex side of which is turned to the fingers, and commonly sends off three or four branches. The first goes to the inner and back part of the little finger; and is sometimes a continuation or production of that branch which goes to the *Hypothenar*.

The other three branches run in the *Interstices* of the four *Metacarpal bones*, near the heads of which, each of them is divided into two branches, which pass along the two internal lateral parts of each finger, from the fore side of the little finger to the posterior side of the *Index* exclusively; and at the ends of the fingers, these digital arteries communicate and unite with each other.

Sometimes the arch of the cubital Artery terminates by a particular branch in the middle finger, and in that case it communicates with a radial artery, which makes up what the other wants.

This arch sends likewise from its concave side, toward the second *Phalanx* of the thumb, a branch for the lateral internal part thereof, and then ends near the head of the first metacarpal bone, by a communication with the *Radialis*, having first given a branch to the fore side of the *Index*, and another to the side of the thumb next the former. These communicate at the ends of the fingers with the neighbouring branches, as in the other fingers.

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This arch sends likewise small twigs to the interosseous muscles, to the Lumbricales, Palmaris, and to other neighbouring parts ; and lastly, to the integuments.

ARTERIA RADIALIS

The Radial Artery begins by detaching a small branch which runs upward like a recurrent, toward the fold of the arm, and turns backward round the external Condyle, communicating with the neighbouring branches, from the trunk of the brachial artery, especially with the first collateral branch on that side.

It runs down along the inside of the Radius, between the Supinator longus, Pronator teres and the Integuments, giving branches to these muscles, and likewise to the Perforatus, Perforans and Supinator brevis. From thence it runs in a winding course toward the extremity of the Radius, supplying the Flexors of the thumb and Pronator quadratus.

Having reached the extremity of the Radius, it runs nearer the skin, especially toward the anterior edge of the bone, being the artery which we there feel when we examine the pulse.

At the end of the Radius, it gives off a branch to the Thenar ; and after having communicated with the arch of the Cubital Artery in the palm of the hand, and sent off some cutaneous branches at that place, it detaches one, along the whole internal lateral part of the thumb.

Afterwards it runs between the first Phalanx and tendons of the thumb, to the Interstice between the basis of this first Phalanx and of the first metacarpal bone, where it turns toward the hollow of the hand.

At this turning, it sends off a branch to the external lateral part of the thumb, which having reached the end thereof, communicates by a small arch with the branch which goes to the internal lateral part.

It likewise sends branches outward, which run more or less transversely between the first two bones of the Metacarpus and the two tendons of the Radialis externus ; and it communicates with an opposite branch of the Cubitalis, together with which it furnishes the external interosseous mus-

cles and integuments of the back of the hand and convex side of the Carpus.

Lastly, the Radial Artery terminates, in its passage over the semi-interosseous muscle of the Index, near the basis of the first metacarpal bone, and as it runs under the tendons of the flexor muscles of the fingers, where it is joined to the arch of the Cubitalis.

It sends off another branch which runs along the fore part of the first bone of the Metacarpus, to the convex side of the Index, where it is lost in the integuments.

It gives likewise a branch to the internal lateral part of the Index, which at the end of that finger, joins an opposite branch which comes from the arch of the Cubitalis. It also sends off a small branch across the internal interosseous muscles, where it forms a kind of small irregular arch, which communicates with the great arch by several small arterial rami.

When the arch of the Cubitalis ends at the middle finger, the Radialis runs along the inner or concave part of the first metacarpal bone, at the head of which it terminates by two branches.

One of these branches runs along the inner and anterior lateral part of the Index; the other passes between the Flexor Tendons of this finger and the metacarpal bone, and having communicated with the cubital branch of the middle finger, it advances on the posterior lateral part of the Index all the way to the end of that finger, where it unites again with the first branch.

ARTERIA DIAPHRAGMATICA.

The left Diaphragmatic Artery goes out commonly from the Aorta descendens, as it passes between the Crura of the small muscle of the Diaphragm. The right Diaphragmatic comes sometimes from the nearest Lumbar artery, but most commonly from the Cæliaca. Sometimes both these arteries arise by a small common trunk immediately from the Aorta. They likewise have the name of *Arteriæ Phrenicæ*.

They appear almost always in several ramifications on the concave or lower side of the Diaphragm, and seldom on the
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the upper or convex side. They give small branches to the *Glandulæ Renales* or *Capsulæ Atrabiliaria*, which sometimes communicate with the other arteries that go to the same part.

They send likewise small branches to the fat which lies upon the kidneys, called the *Membrana Adiposa*, from whence they have the name of *Arteriæ Adiposæ*; and they sometimes come immediately from the trunk of the *Aorta* on one side of the *Mesenterica superior*.

Besides these capital *Diaphragmatic* arteries, there are others of a subordinate class, which come from the *Intercostales*, *Mammariæ internæ*, *Mediastinæ*, *Pericardiæ* and *Cæliaca*, as is observed in the description of each of these arteries.

ARTERIA CÆLIACA.

The *Cæliac Artery* arises anteriorly and a little to the left hand, from the *Aorta descendens*, immediately after its passage through the small muscle of the *Diaphragm*, nearly opposite to the cartilage between the last *Vertebra* of the back and first of the loins. The trunk of this artery is very short; and near its origin, it sends off from the right side two small *Diaphragmaticæ*, tho' sometimes there is only one which goes to the right hand, and is afterwards distributed both ways; communicating with the other arteries of the same name which come from the *Intercostales* and *Mammariæ*. The left branch sends rami to the superior orifice of the stomach and to the *Glandula Renalis* on the same side; the right furnishes the *Pylorus*, and the renal gland on the right side.

Immediately after this, the *Cæliaca* gives off a considerable branch, named *Arteria Ventriculi Coronaria*, and *Gastrica*, or *Gastrica superior*; and then it presently divides into two large branches, one toward the right hand named *Arteria Hepatica*; the other to the left, called *Splenica*, which is larger than the former.

Sometimes this artery is divided into these three branches at the same place, very near its origin; the trunk going out from the *Aorta* almost in a straight line, and the branches

from the trunk almost at right angles, like radii from an axis, whence this trunk has been called *Axis Arteriæ Cæliacæ*.

ARTERIA VENTRICULI CORONARIA.

The Coronary Artery of the stomach goes first to the left side of that organ, a little beyond the superior orifice; round which orifice it throws branches, and also to every part of the stomach near it; and these branches communicate with those which run along the bottom of the stomach to the Pylorus.

Afterwards it runs on the right side of the superior orifice along the small curvature of the stomach, almost to the Pylorus, where it communicates with the *Arteria Pylorica*; and turning towards the small lobe of the liver, it gives off some branches to it.

Then it advances, under the *Ductus Venosus*, to the left lobe of the liver, in which it loses itself near the beginning of the just-mentioned duct, having first given off some small branches to the neighbouring parts of the Diaphragm and Omentum.

ARTERIA HEPATICA.

As soon as the Hepatic Artery leaves the *Cæliaca*, it runs to the upper and inner parts of the Pylorus, in company with the *Vena Portæ*, sending off two branches, a small one called *Arteria Pylorica*, and a large one named *Gastrica Dextra*, or *Gastrica Major*.

The *Pylorica* is ramified on the Pylorus, from whence it has its name; and having distributed branches to the neighbouring parts of the stomach, which communicate with those of the right *Gastrica*, it terminates on the Pylorus, by an *Anastomosis* with the Coronary artery of the stomach.

The right *Gastric Artery* having passed behind and beyond the Pylorus, sends out a considerable branch named *Arteria Duodenalis*, or *Intestinalis*, which sometimes comes from the trunk of the *Hepatica*, as we shall see hereafter. Afterwards this *Gastric Artery* runs along the right side of the great curvature of the stomach, to the neighbouring parts of which, on both sides, it distributes branches.

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These branches communicate with those of the Arteria Pylorica, and of the Coronaria Ventriculi, and with the right Gastro-Epiploicæ, which furnish the nearest parts of the Omentum, and communicate with the Mesenterica superior. After this, the right Gastric Artery ends in the left, which is a branch of the Splenica.

The Duodenal or Intestinal Artery runs along the Duodenum on the side next the Pancreas; to both which it furnishes branches, and also to the neighbouring part of the stomach. Sometimes this artery goes out from the Mesenterica superior, and sometimes it is double.

The Hepatic Artery having sent out the Pylorica and right Gastrica, advances behind the Ductus Hepaticus, toward the Vesicula Fellea, to which it gives two principal branches called Arteriæ Cysticæ; and another named Biliaria, which is lost in the great lobe of the liver.

Afterwards, this artery enters the fissure of the liver, and joins the Vena Portæ, with which it runs within a membranous Vagina, called Capsula Glissoni, and accompanies it through the whole substance of the liver by numerous ramifications, which may be termed Arteriæ Hepaticæ Propriæ.

Before it enters the liver, it gives small branches to the external membrane of this Viscus, and to the Capsula Glissoni. The Gastric and proper Hepatic Arteries come sometimes from the Mesenterica superior, when the ordinary ramifications are wanting.

ARTERIA SPLENICA.

Immediately after the origin of the Splenic artery from the Cæliaca, it runs toward the left hand, under the stomach and Pancreas, to the spleen. It adheres closely to the posterior part of the lower side of the Pancreas, to which it gives several branches named Arteriæ Pancreaticæ.

Near the extremity of the Pancreas, under the left portion of the stomach, the Splenic Artery gives off a principal branch called Gastrica Sinistra or Minor, which runs from left to right along the left portion of the great curvature of the stomach, giving branches to both sides of this portion,

portion, which communicate with those of the Coronaria Ventriculi.

This Gastric Artery sends likewise another branch, at least, to the extremity of the Pancreas, which communicates with the other pancreatic arteries. It also supplies the Omentum with branches, termed Gastro-Epiploicæ Sinistræ; and then it communicates with the right Gastrica, and from this union, the Gastro-Epiploicæ Mediæ are produced.

From this detail we learn that the Arteria Coronaria Ventriculi Pylorica, Intestinalis, both Gastricæ, Gastro-Epiploicæ, and consequently the Hepatica, Splenica and Mesenterica, communicate all together.

Afterwards the Splenic Artery advances towards the spleen, in a course more or less contorted; but before it arrives at that Viscus, it gives two or three branches to the large extremity of the stomach, commonly called Vasa Brevia; and one to the Omentum, named Epiploica.

At the spleen, this artery divides into four or five branches, which enter that Viscus, after having given some small twigs to the neighbouring parts of the stomach and Omentum.

ARTERIA MESENTERICA SUPERIOR.

The superior Mesenteric Artery arises anteriorly from the lower portion of the descending Aorta, a very little way below the Cæliaca, going out a little towards the right hand, but bending immediately afterwards to the left.

Near its origin, it gives off a small branch, which dividing into two, goes to the lower side of the head of the Pancreas, and neighbouring part of the Duodenum, communicating with the Intestinalis by small arches, and Arcolæ or meshes.

Afterwards it passes over the Duodenum, between this intestine and the Meseraic Vein, between the two Laminæ of the Mesentery; and then bending in an oblique direction from left to right, and from above downward, by very small degrees, it advances toward the extremity of the Ilium. By this incurvation, it forms a kind of long arch, from the convex side of which a great many branches go out.

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These branches are sixteen or eighteen in number, or thereabouts, and almost all of them are bestowed on the small intestines, from the lower third part of the Duodenum to the Cæcum and Colon. The first branches are very short, and from thence they increase gradually in length all the way to the middle of the arch; the rest diminishing again by small degrees.

As they approach the intestines, all these branches communicate first by reciprocal arches; then by Areolæ and meshes of all kinds of figures, from which is detached an infinite number of small ramifications, which surround the intestinal canal, like an annular piece of net-work.

These arches and meshes increase in number proportionably to the length of the branches; and their size diminishes gradually as they approach the Intestines.

The first branches from the convex side of the Mesenteric arch, which are very short, supply the Pancreas and Mesocolon, and communicate with the Duodenal Artery. The last branches go to the Appendicula Vermiformis, and send a portion of an arch to the beginning of the Colon.

The considerable branches from the concave side of the Mesenteric arch, are seldom above two or three in number; but before they arise, a small ramus goes out to the Duodenum, and gives some very small arteries to the Pancreas.

The first considerable branch from the concave side of the arch goes into the Mesocolon towards the right portion of the Colon, being first divided into two rami; the first of which runs along the whole superior part of the Colon, where it forms the famous communication with the Mesenterica inferior; and might be named Arteria Colica Superior. The other ramus of this branch runs down on the right portion of the Colon.

The second principal branch having run for some space through the Mesentery, divides into three rami; the first of which goes to the lower part of the right portion of the Colon, where it communicates with the second ramus of the first branch; the second goes to the beginning of the Colon, where it communicates with the first, and to the Intestinum Cæcum.

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The third ramus of this second branch, having communicated with the second, gives small twigs to the Cæcum, Appendicula Vermiformis, and extremity of the Ilium. Afterwards it communicates with the extremity of the arch, or curve trunk of the superior Mesenteric.

All these communications are by arches and masses, as in those branches that come from the convex side of the arch; and it is to be observed in general, that all the branches of the Mesenterica superior are disposed according to the folds of the Mesentery and circumvolutions of the intestines; giving off branches, through their whole course, to the Laminæ of the Mesentery, its cellular substance, and to the Mesenteric glands.

ARTERIA MESENTERICA INFERIOR.

The lower Mesenteric Artery goes out anteriorly from the Aorta Descendens inferior, about a finger's breadth or more above the bifurcation, and below the spermatic arteries; and having run about the length of an inch, or something more; it is divided into three or four branches, which gradually separate from each other.

The first or superior branch, about an inch from its origin, divides into two rami; the first of which runs along the left portion of the Colon, and forms the communication of the two Mesenteric Arteries already mentioned. It may be named Arteria Colica Sinistra. The second ramus having communicated with the first, runs down upon the same portion of the Colon.

The middle branch having run the same length with the first, divides into two rami; one of which passes upward on the extremity of the Colon, communicating by arches with the second ramus of the superior branch; the other runs down on the extremity of the same intestine.

When there is another middle branch, it goes to the first part of the double curvature of the Colon, by a like distribution and communication from above downward.

The lower branch goes to the second portion of the Colon, or to both, when the second middle branch is wanting, and sends up a ramus, which communicates with the foregoing.

It sends another considerable branch downward, called *Arteria Hæmorrhoidalis interna*, which runs down behind the *Intestinum Rectum*, to which it is distributed by several ramifications, and it communicates with the *Arteriæ Hypogastricæ*.

ARTERIÆ RENALES.

The Renal Arteries, called commonly *Emulgents*, are ordinarily two in number, and go out laterally from the inferior descending *Aorta*, immediately under the *Mesenterica superior*, one to the right hand, the other to the left. The right is situated more backward, and is longer than the left, because of the *Vena Cava*, which lies on the right side between the *Aorta* and the *Kidney*.

They run commonly without division, and almost horizontally to the kidneys, into the depressions of which they enter by several branches, which form arches in the inner substance of these *Viscera*.

From these arches, numerous small *rami* go out toward the circumference or outer surface of the *Kidneys*. Sometimes there is more than one artery on each side; sometimes this augmentation is only on one side, and these supernumerary arteries come sometimes immediately from the *Aorta*, and enter at the upper or lower part of the kidneys.

Ordinarily, the right Renal Artery passes behind the *Vena Cava* and Renal Vein on the other side; and the left Artery, first behind and then before the vein. Sometimes they send branches to the *Glandulæ Renales*, *Membrana Adiposa* of the kidneys, and even to the *Diaphragm*.

ARTERIÆ CAPSULARES.

The Arteries of the Renal Glands, which may be termed *Arteriæ Capsulares*, arise sometimes from the *Aorta* above the *Arteria Renalis*, and give out the *Arteriæ Adiposæ*, which go to the fat of the kidneys. Sometimes they come from the trunk of the *Cæliaca*. The right Capsular Artery comes most commonly from the *Arteria Renalis* of the same side, near its origin; the left, from the *Aorta* above the *Renalis*.

ARTERIÆ SPERMATICÆ.

The Spermatic Arteries are commonly two in number, sometimes more. They are very small, and go out anteriorly from the Aorta descendens inferior, near each other, about a finger's breadth below the Arteriæ Renales, more or less, between the two Mesentericæ or between the Renales and Mesentericæ inferiores. Sometimes one is higher, or placed more laterally than the other.

They send off to the common membrane of the kidneys, small branches named Arteriæ Adiposæ; and afterwards they run down upon the Psoas muscles, on the foreside of the Ureters, between the two Laminæ of the Peritonæum.

They give several considerable branches to the Peritonæum, chiefly to those parts of it which are next the Mesentery, and they communicate both with the Mesentericæ and Adiposæ. They likewise send small arteries to the Ureters.

Afterwards, they pass in men through the tendinous openings of the Abdominal Muscles in the Vagina of the Peritonæum, and are distributed to the Testicles and Epididymes, where they communicate with a branch of the Iliaca externa.

In women they do not go out of the Abdomen, but are distributed to the Ovaria and Uterus, and communicate with branches of the Hypogastrica, at the jagged extremities of the Tubæ Fallopianæ.

ARTERIÆ LUMBARES.

The Lumbar Arteries go out posteriorly from the inferior descending Aorta, in five or six pairs, or more, much in the same manner with the Intercostals.

They may be divided into superior and inferior. The superior send small branches to the neighbouring parts of the diaphragm and intercostal muscles, and supply the place of semi-intercostal arteries. Sometimes those pairs go out by a small common trunk, and not separately.

They are distributed on each side to the Psoas muscles, to the Quadrati Lumborum, and to the oblique and transverse muscles of the Abdomen; and by perforating the oblique

lique muscles, they become external Hypogastric arteries. They go likewise to the Vertebral muscles, and to the bodies of the Vertebrae, and enter the Spinal Canal through the lateral notches, to go to the membranes, &c. forming rings much in the same manner with the Intercostals; and they likewise give small twigs to the Nerves.

ARTERIÆ SACRÆ.

The Arteriæ Sacræ go out commonly from the back part of the inferior descending Aorta, at the bifurcation. Sometimes they rise higher, from the Lumbares, and sometimes lower, from the Iliacæ. They are two, three, or four in number, and sometimes but one. They are ramified on the Os Sacrum, and on the neighbouring parts of the Peritonæum, Intestinum rectum, fat, &c. and enter the canal of that bone through the anterior holes, being there distributed toward each side. They likewise send small arteries to the large Fasciculi of nerves, which go out through the holes of the Os Sacrum, and they penetrate the inner substance of that bone.

ARTERIÆ ILIACÆ.

The inferior descending Aorta ends at the last Vertebra of the loins, and sometimes higher, in two large lateral branches, one on the right hand, the other on the left, called Arteriæ Iliacæ; each of which is a common trunk to two other arteries of the same name. This bifurcation lies on the anterior and left aside of that of the Vena Cava.

The primitive Iliac Arteries divaricate gradually as they descend, advancing obliquely toward the anterior and lower part of the Ossa Ilium, without any considerable ramification for about the breadth of three fingers, except a few very small arteries that go to the Os Sacrum, some of which enter by the upper holes, and are distributed like the Arteriæ Sacræ, while others emerge again through the posterior holes, and go to the neighbouring muscles, &c. They likewise give small arteries to the Peritonæum, to the coats of the veins, and to the fat and Ureters, behind which the Iliac trunks pass.

The right Iliac trunk passes first, on the foreside of the origin of the left Iliac vein, and runs down on the foreside of the right vein, almost to the place where it goes out of the Abdomen, its course being there directed more inwardly. The left trunk goes down likewise before the left vein, but lies a little toward the inside as it leaves the Abdomen.

About three fingers breadth from their origin, each Iliac trunk is divided into two secondary arteries, one external, the other internal. The external artery has no particular name; the internal is termed Hypogastrica, which often appears to be no more than a branch of the other, in adults; but in young children, and especially in the fœtus, the Hypogastric artery looks like the trunk, and the other like a branch.

The external Iliac on each side runs down on the Iliac muscle to the Ligamentum Fallopii, under which it goes out of the Abdomen. In this course, it gives off only a few small arteries, to the Peritonæum and other parts near it; but as it passes out of the Abdomen under the ligament, it detaches two considerable branches, one internal, the other external.

The internal branch is named Arteria Epigastrica, and goes out anteriorly from the external Iliaca. From thence it runs obliquely upward on the tendon of the transverse muscle toward the posterior part of the Rectus, which it reaches about two or three fingers breadth above the Os Pubis.

Afterwards the Epigastric artery runs up along the posterior or inner side of this muscle, sending ramifications to the tendons of the neighbouring muscles, &c. and then loses itself by a true Anastomosis of several ramifications, with the Mammaria interna. It likewise communicates with the inferior Intercostals which are spread on the Abdomen.

It sometimes gives out two particular branches, one of which, accompany'd by a nerve, goes through the Foramen Ovale of the Pelvis to the Triceps muscles, &c. the other runs down to the testicles along with the spermatic artery, and there communicates with it.

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The external branch of the outer Iliaca goes off laterally from the outside of that artery under the Ligamentum Fallopii, and from thence to the internal Labium of the Os Ilium, where it divides into two, and is ramified on the oblique and transverse muscles of the Abdomen, communicating with the Arteria Lumbaris.

Besides these two branches, the external Iliaca gives off a small ramus internally, under the Ligament, which runs to the Vagina of the spermatic rope; and sometimes another small twig goes from the outside, to the Os Ilium.

The internal Iliac or Hypogastrica, having run a little more than a finger's breadth inward and backward, bends by small degrees obliquely forward and toward the outside, and afterwards contracting in its dimensions, it ends in the Umbilical artery, which ought to be looked upon as a true continuation of the trunk of the Hypogastrica.

This Arteria Umbilicalis ascends on the side of the bladder, and having detached small rami to that Viscus and to the neighbouring parts of the Peritonæum, &c. it contracts, and in adults is quite closed up, above the middle of the bladder. It likewise gives branches to the Uterus and to the neighbouring parts in both sexes. Afterwards it ascends in form of a Ligament to the Umbilicus, where it joins the Umbilical artery on the other side; its name being taken from its use in the Fœtus.

From the convex side of the curvature of the Hypogastric artery, four or five principal branches commonly go out very near each other. Sometimes they all arise separately, sometimes by small common trunks, and what is the first branch in some subjects, is only a ramus of another principal branch in others; so much does the number, disposition, origin, and distribution of these branches vary in different subjects. For this reason we shall distinguish them by the following proper names; Iliaca minor, Glutæa, Sciatica, Pudica communis sive Pudica Hypogastrica and Obturatrix.

The Iliaca minor, the most posterior of these branches, and which is often no more than a ramus of the Glutæa, passes between the last two Lumbar Nerves, and divides

into two rami, one of which enters the canal of the Os Sacrum through the lowest large anterior holes; the other passes behind the Musculus Psoas to which it gives twigs, and behind the Crural nerve, being afterwards distributed to the Iliac muscle, and to the middle part of the inside of the Os Ilium, penetrating into the substance of the bone, sometimes by one hole, sometimes by more.

The Arteria Glutæa is commonly very considerable, and sometimes the largest of all the Hypogastric branches. Near its beginning it sometimes sends out the Iliaca minor, and sometimes the small ramus that goes from that artery to the Os Sacrum and other parts fixed to that bone. Afterwards this artery goes out of the Pelvis in company with the Sciatic nerve, thro' the upper part of the great sinus of the Os Innominatum, below the Musculus Pyriformis, and is distributed in a radiated manner to the Glutæus Maximus and Medius.

In its passage, it gives some branches to the Os Sacrum, Os Coccygis, Musculus Pyriformis, the muscles of the Anus, and to the neighbouring parts of the Intestinum Rectum, forming a particular Hemorrhoidalis interna. It likewise sends twigs to the bladder and parts near it; and detaches a pretty long branch which runs down with the Sciatic nerve.

The Arteria Sciatica gives first of all, some branches to the Musculus Pyriformis, the Quadrigemini, the Os Sacrum, &c. and even to the inner side of the Os Ischium. It likewise detaches a branch which runs under the Musculus Quadratus, to the articulation of the Os Femoris.

It passes obliquely over the Sciatic nerve, and as they both go through the great posterior sinus of the Os Ilium, it detaches small arteries which are distributed to the inner substance of that nerve. Afterwards it runs up in a radiated manner on the outside of the Os Ilium, and is distributed to the inner substance of that bone, and to the Musculi Glutæi, especially to the Medius and Minimus.

The Pudica Communis, called commonly Pudica Interna, arises sometimes by a trunk common to it and to the Glutæa, and gives out two principal branches; the first of which

which passes through the great sinus of the Os Ilium in company with the Glutæa and Sciatica, and then divides into two rami.

The first ramus goes behind the Spine of the Ischium, between the two Ligaments which lie between that bone and the Os Sacrum; and runs on the inside of the Tuberculum Ischii, all the way to the origin of the Corpus Cavernosum Penis. There it divides into several arteries, one of which goes to the Sphincter Ani, under the name of Hemorrhoidalis externa.

The rest are distributed to the neighbouring integuments, to the bulb of the Urethra, to the Corpus Cavernosum Penis; but the last of these arteries, or rather the extremity of this first ramus, runs from behind forward, over the neck of the Os Femoris, and communicates with a branch of the Arteria Cruralis.

The second principal ramus called commonly Arteria Pudica externa, runs between the bladder and Intestinum Rectum, and is distributed in men to the Vesiculæ Seminales, neck of the bladder, prostate gland, and neighbouring parts of the Rectum.

Afterwards it runs under the Os Pubis on the side of a considerable vein, which lies directly under the Symphysis; and it runs along the Penis between this vein and a nerve, being distributed in its passage to the Corpus Cavernosum, and communicating with the Pudica minor, which comes from the Cruralis.

This second branch of the Pudica major goes off sometimes separately from the Hypogastrica, especially in women, being distributed to the lateral parts of the Uterus, where it communicates with the spermatic artery, near the jagged extremity of the Tuba Fallopiana; and to the neighbouring parts of the Vagina, &c.

The Arteria Obturatrix perforates the Obturator muscles from whence it has its name, and goes out of the Pelvis at the upper part of the ligament of the Foramen Ovale, having first sent a small branch over the Symphysis of the Os Ilium and Os Pubis, to the Inguinal Glands and Integuments.

As it passes by the muscles, it divides and is distributed to the Pectineus and Triceps. It likewise sends out another branch, which communicates with that branch of the Sciatica that goes to the articulation of the Os Femoris; and gives small arteries to the holes in the neck of that bone.

Afterwards the Hypogastric artery ends in the Umbilicalis, as has been already said.

ARTERIE CRURALES.

The Iliac Artery goes out of the Abdomen between the Ligamentum Fallopii, and tendon of the Psoas at the union of the Os Ilium and Os Pubis, and there it takes the name of Arteria Cruralis.

It sends off first of all, three small branches; one of which called the Pudica Externa, goes over the Crural vein to the skin and ligament of the Penis and to the Inguinal glands, communicating with the Pudica Interna. The second goes to the Musculus Pectineus; and the third to the upper part of the Sartorius. All these branches furnish likewise the neighbouring anterior integuments.

Afterwards the Crural Artery runs down on the head of the Os Femoris, and by taking a particular turn, gets on the inside of the Crural vein, about three fingers breadth from where it goes out of the Abdomen. From its origin to this place, it is covered only by the skin and fat, and lies on the Pectineus and Triceps Primus.

In changing its situation, it sends out three considerable branches, one external, one middle, and one internal. They all go out more or less posteriorly, sometimes by a short common trunk, sometimes by two, &c.

The external branch runs on the upper side of the thigh to the Crureus, Vastus Externus, Rectus Anterior, Musculus Fasciæ Latæ and Glutæus Medius; sending up a ramus to the apex of the great Trochanter, which communicates with the first principal ramus of the Pudica Major, and Sciatica, as has been already said.

The middle branch runs down on the inside of the thigh between the triceps muscles, to which it gives several rami,
one

one whereof perforates the second muscle, and is distributed to the *Glutæus Maximus*, *Semi-Nervosus*, *Semi-Membranosus*, *Biceps*, and to the neighbouring integuments.

The internal branch runs backward on the *Quadrigemini* towards the great *Trochanter*; and having detached a ramus which goes into the joint of the *Os Femoris*, it runs downward, and gives rami to all the muscles that lie on the backside of that bone, one of which enters the bone itself on one side of the *Linea Aspera*.

Having sent off all these three branches, the *Arteria Cruralis* runs down between the *Sartorius*, *Vastus internus* and *Triceps*, giving branches to all the parts near it. It is covered by the *Sartorius* all the way to the lower part of the thigh, where it is inflected backward over the *Triceps Tertius* a little above the internal *Condyle* of the *Os Femoris*. Afterwards continuing its course through the hollow of the ham, it is called *Arteria Poplitea*, being accompany'd by the Vein of the same name.

The *Poplitea* while in the ham, is covered only by the integument, sending off branches toward each side, which run up upon the condyles, and communicate with the lower ramifications of the *Arteria Cruralis*.

It sends rami to the joint of the knee, one of which at least passes between the crucial ligaments. As it runs down, it sends branches to the *Gastrocnemii* and *Popliteus*; and having reached the backside of the head of the *Tibia*, it gives off two branches, one to each side.

The first or internal branch surrounds the forepart of the head of the *Tibia*, passing between the bone and internal lateral ligament; and besides several other ramifications, sends up a small branch which communicates with the Arteries that lie round the *Condyles* of the *Os Femoris*.

The second or external branch runs over the head of the *Fibula*, and between the head of the *Tibia* and external lateral ligament of the knee, surrounding the Articulation all the way to the ligaments of the *Patella*, and communicating with the branches which lie round the *Condyles* of the *Os Femoris*, together with a branch of the first or internal ramus.

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Immediately after the origin of these two rami, and before the Poplitea ends, it sends a small artery down on the backside of the interosseous ligament, very near the Tibia, into which it enters by a particular hole a little above the middle portion of the bone.

As the Poplitea ends, it divides into two principal branches, one of which runs between the heads of the Tibia and Fibula, passing from behind forward on the interosseous ligament, where it takes the name of Arteria Tibialis Anterior. The second branch divides into two others, one internal and largest, called Arteria Tibialis posterior, the other posterior and smallest, named Arteria Peronæa posterior.

The Tibialis Anterior having passed between the heads of the Tibia and Fibula, sends small branches upward and laterally. The superior branches communicate with those rami of the Popliteus which lie round the articulation; and the lateral branches go to the neighbouring parts. Afterwards this Tibial Artery runs down on the fore-side of the interosseous ligament, toward the outside of the Tibia, between the Musculus Tibialis Anticus and Extensor Pollicis.

Having run laterally on the Tibia for about two thirds of the length of that bone, it passes on the fore-side under the common annular ligament, and extensor Pollicis, to the articulation of the foot; giving off several rami both to the right and left hand, which communicate laterally with the Tibialis posterior and Peronæa posterior, so that these two bones are in a manner surrounded by arteries.

At the joints of the foot, it sends out branches which run between the Astralagus and Os Calcis, being distributed to the articulation and to the bones of the Tarsus. The communications are here very numerous on all sides.

Having passed the fold of the foot, it sends off toward both sides, other rami, which communicate with the posterior Tibialis and Peronæa; all these branches making a kind of circles round the Tarsus.

Afterwards the anterior Tibial Artery advances on the convex side of the foot, as far as the interstice between the
first

first and second metatarsal bones; between the heads of which, it sends a large branch, which perforates the superior interosseous muscles, and joining the Tibialis posterior, forms an arch on the side of the foot.

It likewise sends two or three considerable branches over the other metatarsal bones, which go to the rest of the interosseous muscles, integuments, &c. and communicate with each other.

Lastly, this artery terminates by two principal branches, one of which goes to the Thenar, and inside of the great toe; the other is spent upon the outside of the great toe, and the inside of the second toe.

The Tibialis posterior, called likewise Suralis, runs down between the Solei, Tibialis Posticus, Flexor Digitorum communis, and Flexor Pollicis; giving branches to these muscles, to the Tibia, and to the marrow of that bone, through a particular canal in its posterior and upper part.

Afterwards it runs behind the inner ankle, communicating with the Tibialis anterior, and surrounded by the neighbouring veins; and passes to the sole of the foot between the concave side of the Os Calcis and Thenar muscle, where it divides into two branches, one large or external, the other small or internal.

The great branch, or Arteria Plantaris externa, passes on the concave side of the Os Calcis obliquely under the sole of the foot, to the basis of the fifth metatarsal bone, and from thence runs in a kind of arch toward the great toe, communicating there with the Tibialis anterior, which perforates the interosseous muscles in the manner already said.

The convex side of this arch supplies both sides of the last three toes, and the outside of the second toe, forming small communicating arches at the end, and sometimes at the middle of each toe, as in the hand. The concave side of the arch furnishes the neighbouring parts.

The small branch, or Arteria Plantaris interna, having reached beyond the middle of the sole of the foot is divided into two; one of which goes to the great toe, communicating with the ramus of the Tibialis Anterior; the other is distributed to the first Phalanges of the other toes, com-
mu-

municating with the ramifications from the arch already mentioned.

The Arteria Peronæa runs down on the backside of the Fibula, between the Soleus and Flexor Pollicis, to which and to the neighbouring parts, it gives rami in its passage.

Having reached to the lower third part of the Fibula, it sends off a considerable branch, which runs in between the Tibia and that bone, passing between their extremities from behind forward, below the interosseous ligament, and is distributed to the integuments of the Tarsus.

Lastly, the Peronæa continuing its course downward, on the back side of the Fibula, as far as the Os Calcis, forms an arch with the Tibialis posterior, between the Astralagus and the Tendo Achillis.

From thence it runs outward, and a little above the outer ankle communicates with the Tibialis anterior by an arch, which sends several small ramifications to the neighbouring parts.

In this description of the Arteries, nothing is said of the Cutaneous Anastomoses, which are exceedingly beautiful in the Fœtus; nor of the frequent and considerable communications of small Arteries upon the Periosteum, which forms a delicate kind of net-work, or Rete Mirabile.

Of the V E I N S.

THE blood distributed to all parts of the body by two great Arteries, the Aorta and Arteria Pulmonaris, returns by three large Veins, called by anatomists Vena Cava, Vena Portæ, and Vena Pulmonaris.

The Vena Cava carries back to the right Auricle of the heart, the blood conveyed by the Aorta to all the parts of the body, except what goes by the Arteriæ Coronariæ Cordis. It receives all this blood from the arterial ramifications in part directly, and in part indirectly.

The Vena Portæ receives the blood carried to the floating Viscera of the Abdomen by the Arteria Celiaca, and the

the two Mesentericæ, and conveys it to the Vena Hepatica, and from thence to the Vena Cava.

The Vena Pulmonaris conveys to the Pulmonary Sinus; or left Auricle of the heart, the blood carried to the Lungs by the Arteria Pulmonaris.

To these three veins two others might be added, *viz.* those which belong particularly to the heart and to its Auricles, and the Sinuses of the Dura Mater.

In describing the general course of the veins, we may either begin by their extremities in all the parts of the body, and end by the trunks carried all the way to the heart, according to the course of the blood; or we may begin by the great trunks, and end by the ramifications and capillary extremities, according to their several divisions and subdivisions.

This last method is most convenient, and makes it a very easy matter to pursue the first, whenever we think it proper to do it; we shall therefore follow it in this description.

General Division of the VENA CAVA.

We commonly talk of the Vena Cava in general, as if it were but one vein at its origin, or had but one common trunk; whereas it goes out from the right Auricle of the heart by two large separate trunks, in a direction almost perpendicularly opposite to each other, one running upward called Vena Cava superior, the other downward called Vena Cava inferior.

It may however be said, that these two veins have a sort of continuity, or a small portion of a common trunk, fixed to the edges of the right Auricle; as if three quarters of the circumference of a large straight tube were cut off, and the edges of a small bladder applied to the edges of the opening thus made in the tube.

The right Auricle may also be look'd upon as a muscular trunk common to these two large veins, and may be called the Sinus of the Vena Cava; but in this respect, the name of Sinus Pulmonaris agrees still better to the left Auricle.

The Vena Cava superior is distributed chiefly to the Thorax, head, and upper extremities, and but very little to the parts below the Diaphragm.

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The Vena Cava inferior is distributed chiefly to the Abdomen and lower extremities, and but very little to the parts above the Diaphragm.

The ancients called the superior Vena Cava, Ascendens, and the inferior, Descendens, having regard only to the great Tubes, and to their division into trunks and branches. Several moderns have retained these names, but in a contrary signification, to accommodate them to the motion of the blood, which descends by the Cava superior, and ascends by the Cava inferior.

But to shun the mistakes that may happen in reports made of wounds or other diseases, and of what is observed in opening dead bodies, and in other cases of these kinds, it is best to retain the distinction of Vena Cava superior and inferior.

The trunk of each of these two veins sends off, much in the same manner with the arteries, a certain number of principal or capital branches, which are afterward ramified in different manners. Each trunk terminates afterwards by a bifurcation or a division into two subordinate trunks, each of which gives off other principal branches, ending in a great number of small trunks, rami and ramifications.

They have likewise this common to them with the arteries, that the greatest part of the capital branches are in pairs, as well as the subordinate trunks. The ramifications of each subordinate trunk taken by itself, are in uneven numbers, but they make even numbers with those of the other like trunk. The Vena Azygos and some other small veins, of which hereafter, are exceptions from this rule.

Before we go on to the particular description of each of these veins, many of which have proper names, it will be necessary to give a general idea of their distribution, and an enumeration of their principal ramifications in the same manner as was done in the description of the arteries, and for the same reason.

VENA CAVA Superior.

The superior Vena Cava runs up from the right auricle of the heart, almost in a direct course, for about two fingers

fingers breadth, lying within the Pericardium, in the right side of the trunk of the Aorta, but a little more anteriorly.

As it goes out of the Pericardium, it is inclined a little to the left hand, and then runs up about an inch, that is, as high as the Cartilage of the first true rib, and little higher than the curvature of the Aorta. At this place it terminates by a bifurcation or division into two large branches or subordinate trunks, one of which runs toward the left hand, the other toward the right.

These two branches are named *Subclaviæ*, as lying behind, and in some measure, under the *Claviculæ*, both in the same manner. They are of unequal lengths, because the trunk of the *Vena Cava* does not lie in the middle of the Thorax, but toward the right side where the left *Subclavian* arises as well as the right, and is consequently longest.

The trunk of the superior *Cava* from where it leaves the Pericardium to the bifurcation, sends out anteriorly several small branches, which sometimes arise separately and sometimes by small common trunks. These branches are the *Vena Mediastina*, *Pericardica*, *Diaphragmatica superior*, *Thymica*, *Mammaria interna*, and *Trachealis*, the last of which go out sometimes behind the bifurcation.

All these small branches from the trunk of the *Cava superior* are termed *Dextræ*; and their fellows on the other side called *Sinistræ* do not arise from the trunk, because of its lateral situation, but from the left *Subclavia*.

Posteriorly, a little above the Pericardium, the trunk of the Superior *Cava* sends out a capital branch, called *Vena Azygos*, or *Vena sine Pari*, which runs down on the right side of the bodies of the *Vertebræ Dorſi*, almost to the Diaphragm; giving off the greatest part of the *Venæ Intercoſtales* and *Lumbares superiores*.

The two *Subclaviæ* run laterally or toward each side, and terminate as they go out of the Thorax, between the first rib and *Clavicula*, immediately before the anterior insertion of the *Musculus scalenus*.

The right *Subclavian*, which is the shortest of the two, commonly sends out four capital branches; the *Jugularis externa*,

externa, Jugularis interna, Vertebralis and Axillaris, which last is rather a continuation than a branch of the Subclavia.

The left Subclavian being longer than the right, for the reason already given, gives off first of all the small veins on the left side, answering those on the right side that come from the trunk of the superior Cava, viz. the Mediastina, Pericardia, Diaphragmatica superior, Thymica, Mammaria interna, and Trachealis.

Next to these small veins, called Sinistræ, it detaches another small branch, called Intercostralis superior Sinistra, and then four large branches like those from the right Subclavian, viz. the Jugularis externa, Jugularis interna, Vertebralis and Axillaris, which are all termed Sinistræ.

The external jugular veins, are distributed chiefly to the outer parts of the throat, neck and head; and send a small vein to the arm, named Cephalica, which assists in forming a large one of the same name.

The internal jugular veins go to the internal parts of the neck and head, communicating with the Sinuses of the Dura Mater, and in several places, with the external jugular veins.

The vertebral veins pass through the holes in the transverse Apophyses of the Vertebrae of the neck, sending branches to the neck and Occiput. They form the Sinus Venales of these Vertebrae, and communicate with the Sinuses of the Dura Mater.

The Axillary Veins are continuations of the Subclaviae, from whence these leave the Thorax to the Axillae. They produce the Mammariae internæ, Thoracicae Scapulares or Humerales, and a branch to each arm, which, together with that from the external Jugularis, forms the Vena Cephalica.

Afterwards the Axillary Vein terminates in the principal vein of the arm, called Basilica; which, together with the Cephalica, is distributed by numerous ramifications to all the parts of the arm, fore-arm and hand.

VENA CAVA, Inferior.

The portion of the inferior Vena Cava, contained in the Pericardium is very small, being scarcely the twelfth part of

an inch on the fore part, and not above a quarter of an inch on the back part. From thence it immediately perforates the Diaphragm, to which it gives the *Venæ Diaphragmaticæ inferiores* or *Phrenicæ*.

It passes next behind the liver through the great Sinus of that Viscus, to which it furnishes several branches, termed *Venæ Hepaticæ*.

In this course it inclines a little toward the *Spina Dorsæ* and *Aorta inferior*, the trunk and ramifications of which it afterwards accompanies in the Abdomen, all the way to the *Os Sacrum*; the *Arteria Cæliaca* and the two *Mesentericæ* only excepted.

Thus the inferior Cava sends out on each side, in the same manner with the *Aorta*, the *Venæ Adiposæ*, *Renales*, *Spermaticæ*, *Lumbares*, and *Sacræ*. Having reached to the *Os Sacrum*, it loses the name of Cava, and terminating by a bifurcation, like that of the descending *Aorta*, it forms the two *Venæ Iliacæ*.

These Iliac Veins having given off the *Hypogastricæ* with all their ramifications, to the Viscera of the Pelvis and to some other external and internal neighbouring parts, go out of the Abdomen, under the *Ligamentum Fallopii*, and there take the name of *Venæ Crurales*.

Each Crural Vein sends off numerous ramifications to all the lower extremity; besides the *Vena Saphena* which goes out near the origin of the *Cruralis*, and running along this whole extremity, detaches many ramifications, all the way to the foot, as we shall see more particularly hereafter.

VENA AZYGOS and VENÆ INTERCOSTALES.

The *Vena Azygos* or *sine Pari* is very considerable, and arises posteriorly from the Superior Cava, a little above the *Pericardium*.

It is immediately afterwards bent backward over the origin of the right lung; forming an arch which surrounds the great pulmonary vessels on that side, as the arch of the *Aorta* does those of the left side, with this difference only, that the Curvature of the *Azygos* is almost directly backward, whereas that of the *Aorta* is oblique.

From thence it runs down on the right side of the *Vertebræ Dorsi* on one side of the *Aorta*, and before the *Intercostal Arteries*; and getting behind the *Diaphragm*, it terminates by a very sensible *Anastomosis*, sometimes with the *Vena Renalis*, sometimes with a neighbouring lumbar vein, sometimes immediately with the trunk of the *Cava inferior*, and sometimes otherwise.

Sometimes this vein is extremely large, resembling the trunk of the inferior *Cava*, from the *Diaphragm* to the origin of the *Renales*; the true *Cava* being through all this space very narrow, or of the size of an ordinary *Azygos*.

The *Vena Azygos* sends out first of all, two or three small veins from the top of the arch, one of which goes to the *Aspera Arteria*; the others partly to the *Aspera Arteria*; the others partly to the *Aspera Arteria*, and partly to the *Bronchia*, by the name of *Venæ Bronchiales*, accompanying the ramifications of the *Bronchial Artery*.

Afterwards the *Azygos* detaches from the extremity of the arch, a small trunk common to two or three small veins, called *Intercostales superiores Dextræ*, which bring back the blood from the first three Series of the *intercostal muscles*, and from the neighbouring-part of the *Pleura*.

These *intercostal veins* send branches through the *intercostal muscles* to the *Serratus superior Posticus*, *Serratus major*, &c. and afterwards they run along the interstices between the ribs, communicating with the *Venæ Mammariæ*.

They likewise send small branches backward to the vertebral muscles, and canal of the *Spine*, where they communicate with the *Venal Circles* or *Sinuses*, which bring back the blood from the *Medulla Spinalis*.

As the *Azygos* runs down, it sends off the inferior *intercostal veins* on the right side, one going to each series of *intercostal muscles*. These veins run along the lower edges of the ribs, and perforate the muscles by branches, which go to the posterior and external part of the *Thorax*.

They communicate with the *Venæ Thoracicæ*, and most commonly with the *Mammaria interna*; and lastly, more or less with each other, by perpendicular branches, near the posterior extremities of the ribs.

The

The Azygos sends off likewise the left intercostal veins, but seldom the whole number; for the superior veins come often from the left Subclavian, as we shall see in the history of that vein. The inferior intercostal veins, to the number of six or seven, sometimes more, sometimes fewer, come often from the trunk of the Azygos; and running between the Aorta and Vertebræ, to the substance of which they give small capillary twigs, they send off almost the same ramifications with the veins on the right side, and likewise some to the Oesophagus.

Sometimes these intercostal veins come from a small common trunk which goes out from that of the Azygos, and passing between the Aorta and Vertebræ is bent downward along the left side of the Vertebræ, in which course, it detaches the Intercostals laterally. This small trunk is in some subjects bifurcated upward and downward, as it sends off the Intercostals; and in others there are two small common trunks.

Lastly, there is sometimes an intire Azygos on the left side, which proceeding from the arch of the ordinary Azygos, is afterwards distributed in the same manner as the other on the right side; but this disposition likewise varies very much.

The Azygos having reached below the last rib, sends off a large branch, which bending outward, perforates the muscles of the Abdomen, is ramified between their different planes, and communicates with the like ramifications of the last, or last two intercostal veins.

Sometimes it sends off the Vena Diaphragmatica inferior, and likewise gives downward to the first, or first two transverse Apophyses of the Vertebræ Lumbares, a branch which forms the first Venæ Lumbares Dextræ.

These communications between the last intercostal, and first lumbar veins are very irregular, being sometimes by a series of opposite angles, sometimes by Arcolæ, sometimes by a reticular texture, &c. Sometimes the extremity of the Vena Azygos communicates either mediately or immediately with the Vena Adiposa, and even with the Vena Spermatica.

VENÆ PECTORALES Internæ.

The Pectorales internæ, are small veins disposed in pairs toward the right and left hand, behind the Sternum and parts near it, including the Diaphragmaticæ superiores, or Pericardio-Diaphragmaticæ, Mediastinæ, Mammariæ internæ, Thymicæ, Pericardiæ, and Gutturales or Tracheales.

All these small veins are divided into right and left; and these are both distributed much in the same manner; but they differ in their origins, because of the inequality in the bifurcation of the Cava superior.

The right Vena Mediastina goes out anteriorly from the trunk of the superior Cava, a little above the origin of the Azygos; the left comes from the Subclavia.

The right superior Diaphragmatica or Pericardio-Diaphragmatica comes anteriorly from the root of the bifurcation near the Mediastina; and is distributed by several branches to the upper, fore and back parts of the Pericardium, communicating with those of the left Diaphragmatica, and accompanying the nerve of the same name. The left superior Diaphragmatica comes from the left Subclavian; a little below the origin of the Mammaria.

The right internal Mammaria arises anteriorly from the Vena Cava, a little below the angle of the bifurcation. It runs along the nearest internal or posterior edge of the Sternum, and on the cartilaginous extremities of the right ribs, together with the artery of the same name. Having reached near the Diaphragm, it sends it a branch which runs toward the tendinous plane, and communicates with the common diaphragmatic veins.

Afterwards this mammary vein gives small branches to the Mediastinum, and others between the ribs to the Integuments; of which those that pass between and under the cartilages of the last true ribs, run down on the inner or posterior side of the Musculi Recti Abdominis, being ramified among their fleshy fibres, and communicating really with the Epigastric veins by several small twigs.

The left internal Mammaria arises anteriorly from the left Subclavian, opposite to the cartilage or anterior extremity of the first true rib.

The

The right Vena Thymica, when it arises separately, goes out from the bifurcation; and when it is wanting, the Thymus from whence it takes its name, is furnished by the Gutturalis or some other neighbouring vein. This vein often reaches no lower than the inferior part of the Thymus; and the left vein of the same name comes from the left Subclavia, almost opposite to the Sternum.

The right Pericardia seems to go out rather from the origin of the right Subclavian than from the trunk of the superior Cava; but in this there are many varieties. It goes to the upper side of the Pericardium, and other neighbouring parts. The left Pericardia comes sometimes from the left Subclavian, before the Mammaria, and sometimes from the Mammaria or Diaphragmatica superior on the same side.

The right Gutturalis or Trachealis goes out from the upper part of the bifurcation, above the Mammaria of the same side, sometimes more backward, and sometimes from the Subclavia. It is distributed to the Glandulæ Thyroidææ, Trachea Arteria, Musculi Sterno-Hyoidæi, Thymus and Glandulæ Bronchiales. It communicates by lateral branches more or less contorted, with the internal jugular vein, and sometimes by another branch, with a small vein, which the internal jugular sends to the Glandula Thyroides. The left Gutturalis comes from the upper or posterior part of the left Subclavian near its origin.

The smallest internal pectoral veins do not always arise separately, but have sometimes a small common trunk; especially on the right side; and of all these small veins, the Mammaria interna is the most considerable.

VENÆ SUBCLAVIÆ.

The right Subclavian Vein, as has been already said, is very short, and its course very oblique, so that it appears to rise higher than the left vein. It sends off first of all, four large branches already mentioned, *viz.* the Vertebrales, which is the first and most posterior; Jugularis interna, Jugularis externa and Axillaris.

The

The left Subclavian seems to ascend but very little, after the bifurcation, because it runs further and more transversely than the right; and in this course it covers the origin of three large arteries, which come from the curvature of the Aorta. It sends off four large branches besides the small pectoral veins, and receives the Ductus Thoracicus.

It likewise gives off, before its principal division, a small trunk for the left superior Intercostals, which are sometimes six in number, and communicate with the inferior Intercostals, and with a branch of the Vena Azygos. This small common intercostal trunk furnishes likewise the left Bronchialis.

Each Subclavian Vein near the middle of the Clavicula, sends off a branch called Cephalica, which descends near the surface of the body, between the Deltoides and Pectoralis major, and reaches the arm in the manner which shall be related hereafter.

VENÆ JUGULARES Externæ:

Each external jugular Vein arises from the Subclavian on the same side, sometimes from the Axillaris, and sometimes from the union of these two veins. The right and left do not always arise in the same manner; for sometimes the right comes from the Subclavian, and the left from the internal Jugular on the same side. They run up between the Musculus Cutaneus and Sterno-Mastoidæus, being covered by the former, and crossing over the latter.

Sometimes they are double from their very origins; and when they are single, each of them divides afterwards into two, one anterior, and the other posterior or rather superior. The anterior vein goes to the throat and face, running up toward the angle of the lower jaw, and the posterior goes to the temples and Occiput.

VENA JUGULARIS Externa Anterior.

The anterior external jugular Vein is often a branch of the Jugularis interna, and sometimes arises from the communications of the two Jugulares in such a manner as that
it

it cannot be said to belong more to the one than to the other. Sometimes, but very rarely, it comes from the Vena Axillaris.

It runs up toward the lateral part of the lower jaw, between the angle and the chin, like a Vena Máxillaris, and sends several branches forwards, backwards and inwards.

Posteriorly it gives, (1) a large branch on the side of the upper part of the Larynx, which communicates with the Jugularis interna; and likewise with a large short branch of the Jugularis externa posterior, of which below. (2) A small branch which has the same communication, but which is not always to be found. (3) Another small branch a little below the lower jaw, which communicates with the Jugularis externa posterior.

Anteriorly it sends several branches to the muscles of the Larynx, Sterno-Hyoidæi, Thyro Hyoidæi and to the Integuments; and below the Larynx it sends communicating branches to the Jugularis externa anterior of the other side.

A little higher, opposite to the Cartilago Thyroides, it gives off a transverse branch, which runs on the anterior and lower part of the Musculi Sterno-Mastoidæi, and communicates with the Jugularis of the other side, tho' not always by a vein of the same kind.

The superior and inferior transverse branches communicate on each side by branches more or less perpendicular, and send a small branch to the Musculus Quadratus of the chin, to the Musculus Cutaneus and Integuments.

It sends another large branch anteriorly toward the Symphysis of the lower jaw, which after having supplied the maxillary Glands, is distributed to the digastric muscle, to the chin and under lip.

Interiorly at the same place it sends out a large branch, which furnishes the Glandulæ Sublinguales, runs down toward the Cornua of the Os Hyoides, to communicate with some branches of the Jugularis interna, and sends several rami to the tongue, called Venæ Raninæ. It gives
off

off likewise a small branch, which running upon the *Musculus Labiorum Triangularis*, to the commissure of the lips, is distributed to the neighbouring parts.

The same branch which gives out the *Venæ Raninæ*, detaches another to the lateral parts of the *Septum Palati*, which is distributed to the *Amygdalæ*, and to the *Uvula*, and sends rami forward to the membrane, which lines the arch of the palate. Another branch goes out from it to the *Pterygoidæus internus*, *Peristaphylini* and *Cephalo-Pharyngæi*.

Afterwards the trunk of the anterior external jugular vein runs up on the *Musculus Triangularis*, where it receives the name of *Vena Triangularis*, in a winding course from the angle of the lower jaw to the great or internal angle of the Orbit, sending branches on each side to the muscles and integuments.

These branches communicate with each other, especially one which passes under the *Zygoma*, behind the *Os Malæ*, to the inferior Orbitaly or *Spheno-maxillary fissure*, and another small branch, which runs along the inferior portion of the Orbitaly Muscle, to the small or external angle of the eye, where it communicates with the rami *Temporales* and *Frontales*.

It is here to be observed that under the angle of the lower jaw, there is a great variety of communications between the external and internal jugular veins, and also a great variety in the distribution of these veins.

Almost all the ramifications, which at this place go from the external jugular vein, to be distributed on the upper part of the throat and on the face in some subjects, arise in other subjects from the internal Jugular; and sometimes, one part of them comes from the external Jugular, the rest from the internal.

The trunk of the *Vena Angularis* having reached the bones of the nose, sends out a branch through the lateral cartilages of the nose, which is distributed to the *Nares*; and another which runs down in a winding course to the upper lip.

At

At the great or inner angle of the eye, the same trunk sends off several other branches; the first of which goes to the root of the nose, and communicates with its fellow from the other side, gives several small veins to the holes of the *Ossa Nasi*.

The second branch runs up on the fore-head, by the name of *Vena Frontalis*, antiently *Præparata*; and is distributed to each side, communicating with its fellow, when any such vein is found.

The third branch enters the Orbit in a winding course, one on each side of the cartilaginous pully, and communicates with the Sinuses of the *Dura Mater*, by the orbitary Sinus of the eye.

The fourth branch goes along the *Musculus Superciliaris* and the upper part of the *Orbicularis*, to the small or external angle of the Eye, to communicate with the *Vena Temporalis* and with that vein which runs along the lower part of the orbicular muscle, with which it forms a kind of circle.

VENA JUGULARIS externa posterior, five superior.

The posterior or superior external jugular Vein runs up toward the parotid gland, and lower anterior part of the eye, giving out several considerable branches toward each side.

At its origin it sends out posteriorly, a principal branch with its ramifications, to the muscles which cover the Scapula, and joint of the Humerus, commonly called *Vena Muscularis*, and which might be named *Super-Humeralis*.

A little higher, it gives off the *Vena Cervicalis* which goes to the vertebral muscles of the neck. This vein communicates with the *Humeralis* by the several *Areolæ*, or venal masses, and they are both ramified in different manners.

These ramifications and communications are in part covered by the *Musculus Trapezius*, and communicate likewise with some branches of the *Vena Occipitalis*, and with a branch of the superior intercostal vein, which perforates the first intercostal muscle.

Near

Near the cervical vein, but a little more outward, it gives off sometimes the small Vena Cephalica, which runs down between the Pectoralis major, and Deltoides, as was already said, and unites with the Vena Cephalica of the arm, which shall be described hereafter.

Backward it detaches the Vena Occipitalis, which is distributed on the Occiput, and sometimes comes from the Vena Vertebralis or Axillaris, &c. It likewise sends out a small vein, which enters the Cranium by the posterior Malleolar hole, and terminates in one of the lateral Sinuses of the Dura Mater. This branch comes sometimes from another vein.

Having reached as far as the Parotid Gland, it forms communications with the anterior external Jugular, under the angle of the lower jaw; and then passes through the Parotid Gland, between that angle and the Condyle, giving off a large branch which communicates with another branch common to the internal and anterior external Jugulars.

Sometimes there are several branches, which having run a very little way, unite together and represent the short large branch, forming Areolæ or Masses through which the nerves pass.

Afterwards it passes before the ear, taking the name of Vena Temporalis, which is distributed to the temples and lateral parts of the head, towards the Occiput and forehead. Sometimes the temporal Vein has two origins, whereof one is from the Jugularis interna.

The temporal Vein of one side communicates above, with its fellow on the other side; before, with the Vena Frontalis, and behind, with the Vena Occipitalis. Opposite to the ear, it gives out a large branch, one ramus of which runs under the lower edge of the Zygoma, and then returning, communicates with another ramus from the same Jugularis, a little below the Condyle of the lower jaw, forming a kind of island irregularly round.

Behind this Condyle, it gives branches to the Temporal Muscle, to the neighbouring parts of the upper jaw, and to the inside of the lower jaw, almost in the same manner as is done by the arteries.

Only

Only one of these branches runs from without inward, between the Condylöide and Coronöide Apophyses, to be distributed to the Musculus Temporalis and Pterygoidæi; sending off a ramus to the Masseter, in its passage.

VENA JUGULARIS Interna.

The internal jugular Vein, is the largest of all those that go to the head; tho' not so large as it seems to be, when injected.

It runs up behind the Sterno-Mastoidæus and Omo-Hyoidæus which it crosses; along the sides of the Vertebrae of the neck, by the edge of the Longus Colli, to the Fossula of the Foramen Lacerum of the Basis Cranii.

The first branches which it sends off are small and go to the Thyroide Glands. About two fingers breadth higher up, it detaches a middle-sized branch which runs laterally toward the Larynx, and may be named Vena Gutturalis.

This Guttural Vein divides chiefly into three branches; the lowest of which goes to the Thyroide Gland and neighbouring muscles; the middle branch to the Larynx, Musculi Thyroidæi, &c. and the third runs upward to the great communication between the two Jugulares already mentioned. In this, however, there is some variety, and I have seen the left Guttural Vein go out from the Axillaris.

About the same distance upward, almost opposite to the Os Hyoides, the internal Jugular gives another branch, which sends rami to the muscles belonging to that bone, and others which communicate with the foregoing branch. This other branch runs upward toward the parotid gland and angle of the lower jaw, where it sends communicating branches forward and backward to the two external Jugulares.

It is at this place likewise that the internal Jugular sometimes produces the Vena Maxillaris interna and all its ramifications, as has been already said in the description of the Jugularis anterior externa.

The internal Jugular sends another branch backward, which is distributed to the Occiput, where it communicates with a branch of the Vertebralis; and through the poste-

rior Mastoide hole, with the lateral Sinus of the Dura Mater. This communication is sometimes by an anastomosis with a branch of the external jugular, or of the Cervicalis which goes thither.

Afterwards it reaches the Foramen Lacerum of the Basis Cranii, bending a little, and sending off small twigs to the Pharynx and neighbouring muscles.

VENA VERTEBRALIS.

The Vertebral Vein arises posteriorly from the Subclavia or Axillaris, sometimes by two stems, sometimes by one, which soon afterwards divides into two.

The first and principal stem gives out a branch called Vena Cervicalis, which is distributed to the neighbouring muscles, and afterwards runs up through the holes of the transverse apophyses of the Vertebrae Colli. This cervical branch comes sometimes from the Axillaris.

The other stem of the Vertebral Vein runs up on the side of the Vertebrae and having reached the fourth, are sometimes higher, it runs in between the transverse apophyses of that Vertebra and of the fifth, to join the first or principal stem.

Thus the Vertebral Vein accompanies the artery of the same name, sometimes in one trunk, sometimes in several stems, through all the holes of the transverse apophyses of the Vertebrae Colli, all the way to the great Foramen Occipitale, communicating with the occipital veins and small occipital sinuses of the Dura Mater.

In its passage it gives off one branch which enters by the posterior Condylode hole of the Os Occipitis, and communicates with the lateral sinus of the Dura Mater; but it is not always to be met with.

As these veins run through the holes in the transverse apophyses, they send branches forward to the anterior muscles of the neck, and to the small interior muscles of the head.

Other branches go likewise outward and backward to the muscoli transversales and vertebrales Colli; and inward to the great canal of the spinal marrow, where they form sinuses, which communicate with those on the other side.

These

These vertebral sinuses are pretty numerous, and placed one above another all the way to the Occiput; the lower communicate with the upper; and at the great Foramen of the Os Occipitis, there is a communication between them and the occipital sinuses of the Dura Mater.

VENA AXILLARIS.

The Subclavian Vein having sent off the branches already described, goes out of the Thorax, and passes before the anterior portion of the Musculus Scalenus, and between the first rib and the clavicle, to the Axilla. Through this course it takes the name of Vena Axillaris, and gives off several branches, the chief of which are the Venæ Musculares, Thoracicæ and Vena Cephalica, which is sometimes double.

The first veins which it sends off are the Musculares distributed to the middle portion of the Musculus Trapezius, to the Angularis, Infra-Spinatus and Subscapularis; and as some of these branches go to the shoulder exteriorly, others interiorly; the Venæ Scapulares are distinguished into external and internal.

A little before the Axillaris reaches the Axilla, it sends out the Venæ Thoracicæ, one of which is superior, called also, Mammaria Externa, and the other Inferior. It likewise sends rami to the Musculus Subscapularis, Teres Major, Teres Minor, Supra-Spinatus, Latissimus Dorsi, Serratus Major, Pectoralis Minor, Pectoralis Major, and to the glands of the Axilla; and sometimes gives a communicating branch to the Vena Basilica.

The Axillaris having reached the side of the head of the Os Humeri, produces a very considerable branch named Vena Cephalica, and afterwards runs along the arm by the name of Vena Basilica; which however appears sometimes to be rather a branch, than a continuation of the trunk of the Axillaris; in which case the Cephalica and Basilica might be looked upon as two principal branches of the Axillary vein.

VENA CEPHALICA.

The Cephalic vein which is a branch of the Axillaris, at a small distance from its origin, joins the small Cephalica

which runs down from the Subclavia, or Jugularis externa; having till then run near the surface of the body between the Deltoides and Pectoralis Major, and sometimes these two veins communicate before their union.

The great Cephalica runs down between the tendons of the last mentioned muscles, and along the outer edge of the external portion of the Biceps; communicating several times with the Vena Basilica, and sending small rami on each side, to the neighbouring muscles, fat and skin. Some branches go out from its upper part, which, lower down, unite again with the trunk.

A little below the external Condyle of the Os Humeri, it detaches a branch backward, which runs up between the Musculus Brachialis and the upper portion of the Supinator Longus, and afterwards bends back between the Os Humeri and Anconæus Externus, where it communicates with some branches of the Basilica.

Having reached very near the fold of the arm, it is divided into two principal branches, one long, the other short. The long branch is named Radialis externa, and the short one may be called Mediana, Cephalica, to distinguish it from another Mediana, which is a short branch of the Basilica; and therefore ought to be called Vena Mediana Basilica.

The external Radial Vein runs along the Radius between the muscles and integuments, giving off branches toward both sides, which communicate with other branches of the same vein, and with some from the Basilica, forming Areolæ much in the same manner as the Saphena does in the lower extremity.

The Mediana Cephalica runs down obliquely toward the middle of the fold of the arm, under the integuments, and over the tendon of the Biceps where it joins a short branch of the same kind from the Basilica, which I have already named Mediana Basilica. These two Medianæ unite in an angle, the apex of which is turned downward.

From this angular union, or Anastomosis, a considerable branch goes out, which runs down on the fore-arm, uniting on one side with the Vena Cephalica, and communicat-
ing

ing on the other with the Basilica, by several irregular Areolæ. The name of Mediana is given to this large branch, as well as to the two short ones, by the union of which it is formed; but that they may not be confounded, this large branch may be termed Mediana Major or Mediana, the names already given to the other two being retained.

From this union of the two lateral Medianæ, and sometimes from the origin of the Mediana Media, which is the true Mediana of *Riolan*, a branch goes out which runs down on the inside of the fore-arm, opposite to the interosseous ligament, and is called Vena Cubiti Profunda. It goes to the neighbouring muscles, and communicates with the other veins of the fore-arm. The Mediana Cephalica sometimes sends down a long branch, called Radialis interna, which lies almost parallel to the Radialis externa already mentioned.

Afterwards the Cephalica having reached the extremity of the Radius, is distributed by numerous Areolæ, almost in the same course with the Radial Artery.

A particular branch goes out from it, which runs more or less superficially between the thumb and Metacarpus, by the name of Cephalica Pollicis. The Areolæ furnish the interosseous muscles and integuments, and communicate with a small ramus from the Basilica, called by the ancients Salvatella.

VENA BASILICA.

The ancients termed the Basilic Vein of the right arm, the vein of the Liver, or Vena Hepatica Brachii; and that of the left arm, the vein of the Spleen, or Vena Splenica Brachii. It has sometimes a double origin, by a branch of communication with the trunk of the Axillaris.

It sends off first of all, under the head of the Os Humeri, a pretty large branch, which passes almost transversely round the neck of that bone, from within, backward, and from behind, outward, running up on the Scapula, where it is ramified on the Deltoides, and communicates with the Venæ Scapulares externæ. This branch may be named Vena Sub-humeralis or Articularis, as the Artery

which lies in the same place; they both having much the same course.

This Articular Vein sends down two principal branches, one of which runs along the inside of the bone, to which, and to the *Periosteum*, it gives small veins. The other turns forward, toward the middle of the arm between the bone and the *Biceps*, and communicates with the *Cephalica*.

Below the neck of the *Os Humeri*, near the hollow of the *Axilla*, and behind the tendon of the *Pectoralis Major*, the *Basilica* sends out a considerable branch, which runs down on the side of the *Brachial Artery*, and furnishes the neighbouring muscles on both sides. This vein is named *Profunda Brachii*, or *Profunda superior*.

Immediately afterwards, the *Basilica* detaches two or three small veins, which run down very closely joined to the *Brachial Artery*, surrounding it at different distances by small twigs, which communicate with each other. These veins might be named *Venæ Satellites Arteriæ Brachialis*.

These small veins which often arise from the *Profunda superior*, communicate with the *Basilica* and *Cephalica*; and having reached the fold of the arm, they divide like the artery, and the same divisions are continued along the whole fore-arm, through all which space they accompany and surround the arterial branches, in the manner already said.

Afterwards the *Basilica* continues its course along the inside of the *Os Humeri*, between the muscles and integuments, forming many communications with the *Vena Profunda*, *Satellites* and *Cephalica*, and supplying the muscles and integuments.

Having reached the inner condyle, and having sent off obliquely in the fold of the arm, the *Mediana Basilica*, it runs along the *Ulna*, between the integuments and muscles, a little towards the outside, by the name of *Cubitalis externa*, still communicating with the *Profunda*, *Satellites* and *Cephalica*.

Having detached the *Mediana Basilica*, it sends out another branch, which runs down along the inside of the fore-arm near the *Ulna*, and communicates with the *Mediana*

diana major, &c. This branch may be named Cubitalis interna.

The Basilica having at length reached the extremity of the Ulna, sends several branches to the convex side of the Carpus; one of which, named Salvatella, goes to that side of the little finger next the ring finger, having first communicated with the Cephalica, by means of the Venal Areolæ conspicuous on the back of the hand. In the other fingers this vein follows nearly the same course with the artery.

In general, the external or superficial veins of the forearm are larger than the internal; but they are accompanied only by smaller arteries; whereas the deep veins accompany large arteries.

VENA CAVA Inferior.

The inferior Vena Cava having run down about a quarter of an inch from the right Auricle of the heart, within the Pericardium, as has been already said, pierces that membrane, and the tendinous portion of the Diaphragm, which adhere very closely to each other.

At this place it gives off the Venæ Diaphragmaticæ or Phrenicæ, which are distributed to the Diaphragm, and appear chiefly on its lower side, one towards the right hand, and one toward the left. The right vein is more backward and lower than the left. The left is distributed partly to the Pericardium, and partly to the Diaphragm; and sometimes they send rami to the Capsulæ Renales, much in the same manner as the Arteriæ Phrenicæ.

The inferior Cava having perforated the Diaphragm, passes through the posterior part of the great fissure of the liver, penetrating a little into the substance of that viscus, between the great lobe and the Lobulus Spigelii, being however covered but very little on the back side by the substance of the liver, till it reaches the Lobulus.

In its passage, it sends off commonly three large branches, called Venæ Hepaticæ, which are ramified in the liver. Sometimes there are only two, and sometimes four.

Besides these large branches, it sends out some other small ones, either before or immediately after it goes out of the liver; which, according to some Anatomists, answer

to the branches of the Hepatic Artery, as the large branches do to those of the Vena Portæ.

In the Fœtus, as the Vena Cava passes by the liver, it gives off the Ductus Venosus, which communicates with the Sinus of the Vena Portæ, and in Adults is changed to a flat ligament.

After its passage through the liver, the Vena Cava turns from before backward, and from right to left, toward the Spina Dorsi, placing itself on the right side of the Aorta, which it accompanies from thence downward.

Having got as low as the Arteriæ Renales, it gives off the veins of the same name, termed formerly Venæ Emulgentes, and which are the largest of all the veins that go from the Cava inferior, from the liver to the bifurcation.

The right Renal vein is the shortest, and runs down a little obliquely because of the situation of the Kidney. The left vein, which is the longest, crosses on the fore-side of the trunk of the Aorta, immediately above the superior Mesenteric artery; and both veins accompany the Renal Arteries.

They send up the Venæ Capsulares, which go to the Glandulæ Renales, and downward, the Venæ Adiposæ, which go to the fatty covering of the Kidneys; and ordinarily the left Renal vein furnishes the left Spermatic vein. Afterward they run to the sinus or cavity of the kidneys, in the substance of which they are distributed by numerous ramifications.

A little below the Renal veins, the trunk of the Cava sends out anteriorly toward the right side, the right Vena Spermatica. The left spermatic vein comes commonly, though not always, from the left Renalis, as has been already observed. Both veins accompany the spermatic arteries, to the parts to be mentioned hereafter.

In their passage they send several small branches on each side, to the Peritonæum and Mesentery, where they seem to be joined by Anastomoses with the Venæ Meseraicæ, and consequently with the Vena Portæ.

They sometimes send a considerable branch over the Iliac Muscle, which afterwards dividing into two, one ramus

mus runs up to the Membrana Adiposa of the kidneys, the other runs down on the last-mentioned muscle.

About the same height with the spermatic vein, the inferior Cava sends off posteriorly in some subjects, a branch which runs upward, and communicates with the Vena Azygos. Sometimes this branch goes out from one or other of the Renales, and appears to be a true continuation of the extremity of the Azygos.

The Cava sends likewise off posteriorly the Venæ Lumbares, which commonly arise in pairs in the same manner as the arteries of the same name go out from the Aorta. These may be divided into superior and inferior veins.

Their origins vary in different manners. Sometimes the Cava gives off a branch to each side below the first Vertebra of the loins, which, like a common trunk, furnishes the lumbar veins. This branch communicates with the Azygos.

Sometimes a considerable branch goes out from the lower extremity of the Cava, near the bifurcation, chiefly on the right side; which afterwards running up between the bodies and transverse apophyses of the Vertebrae, detaches the Venæ Lumbares, and communicates with the Azygos.

Sometimes a like branch comes from the beginning of the left Vena Iliaca, and running up on that side in the same manner, produces the Lumbares. This branch likewise communicates with the Azygos, and with the superior or descending Ramus Lumbaris.

The Venæ Lumbares on one side communicate by transverse branches with those of the other side, and likewise with each other by branches more or less longitudinal. The first and second often go from the Azygos, and thereby they communicate with the intercostal veins.

The Lumbar veins send small capillaries, in their passage, to the substances of the bodies of the Vertebrae; and they are distributed to the muscles of the Abdomen, Quadratus Lumborum, Psoas, Iliacus, &c. They send branches backward to the neighbouring vertebral muscles, and to the canal

nal of the Spine, and communicate with the venal sinuses in the same manner as the intercostals.

The inferior Cava having reached as low as the last Vertebra of the loins, and near the bifurcation of the Aorta, runs in behind the right Iliac Artery, and there is divided into two subaltern trunks, called the right and left Iliac Veins.

The extremity of the trunk of the Vena Cava passes in some subjects behind the origin of the right Iliac Artery; in others, it is the left Iliac Vein which passes there, and consequently crosses the right Iliac Artery. Afterward the left Iliac Vein accompanies the inside of the left Artery, till it goes out of the Abdomen. Therefore the Iliac Veins lie on the insides of the arteries at this place.

From this bifurcation of the Vena Cava, and often from the origin of the left Iliaca, the Vena Sacra goes out, and accompanies the artery of the same name in its distribution to the Os Sacrum, to the nerves which lie there, and to the membranes which cover both sides of the bone.

VENÆ ILIACÆ.

Each original Iliac Vein is divided on the side of the Os Sacrum, much after the same manner as the arteries, into two large trunks, or secondary Iliac Veins. This second bifurcation is about a finger's breadth below that of the Iliac Arteries.

One of these trunks is named Vena Iliaca Externa, or Anterior; the other Interna, or Posterior. The external vein is likewise named simply Iliaca, and the internal, Hypogastrica. The external vein seems to be the true continuation of the trunk, and the Hypogastrica only a branch. We here speak of adult bodies, because in the fœtus there is a considerable variation.

These veins follow nearly the course and distribution of the Iliac Arteries, except that the Hypogastric vein does not send off the Vena Umbilicalis. The external Iliac Veins lie more or less on the inside of the Arteries, in the manner already said; but the Hypogastric Veins,
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in the bottom of the Pelvis, lie almost behind the Arteries on the same side.

From the common trunk of the Iliac Veins, and sometimes from the origin of the Iliaca Externa, a particular branch goes out, which is distributed to the Musculus Psoas, Iliacus, and Quadratus Lumborum; and afterwards sends a ramus on the fore-side of the last transverse apophysis of the loins, to communicate with the last lumbar vein.

The external Iliac, a little before it leaves the Abdomen, near the Ligamentum Fallopii, lying on the Psoas and Iliac Muscles, gives off almost the same branches with the artery of the same name, and follows the same course. The chief branches are these.

A little before it goes out of the Abdomen, it sends off from the outside, a small branch, which runs up along the Crista of the Os Ilium, and gives branches on each side, to the lateral and posterior lower portions of the Musculi Abdominis, to the Musculus Iliacus, &c.

From the inside, before it leaves the Abdomen, it sends off the Vena Epigastrica; which having furnished some small rami to the neighbouring conglobated glands, runs up along the inside of the Musculi Recti, on which it is ramified both ways; as also on the broad muscles of the Abdomen, by other small branches, which penetrate from within outwards.

Afterwards, the Vena Epigastrica runs upward, and joins the ramifications of the Mammaria, by an equal number, accompanying the Epigastric Artery. From the inside of the Epigastric vein, a branch is sometimes detached to the Musculus Obturator internus, where it joins another ramus named Vena Obtutrix.

Before the Iliac vein gets from under the Ligamentum Fallopii, it sends several small rami to the neighbouring Lymphatic Glands; and immediately afterwards, losing the name of Iliaca, it takes that of Cruralis.

VENA HYPOGASTRICA.

The Hypogastric or internal Iliac vein, runs behind the artery of the same name, making the same kind of arch, from which the following branches go out.

From the posterior or convex part of the arch, it gives a branch to the superior lateral part of the Os Sacrum, which is distributed to the Musculus Sacer or Transverso-Spinalis Lumborum, and other muscles thereabouts, and to the cavity of the bone, which it enters through the first great hole.

A little lower, on the same side, it sends out another, which is distributed much in the same manner with the former, and enters the second hole.

From the external lateral part of the same arch, a little anteriorly, it sends out a large branch, which runs behind the great Sciatic sinus, and is distributed to the Musculi Glutæi, Pyriformis and Gemelli.

Lower down, the same lateral part of the Hypogastric vein gives out another large branch; which having run a little way, detaches several rami, and afterward reaching the Foramen Ovale of the Os Innominatum, perforates the Obturator muscles, communicates with the Vena Cruralis, and is distributed to the Musculus Pectineus, Triceps, and neighbouring parts. This vein is termed Obturatrix, from its passing through the muscles of that name.

Among the branches sent off by the Vena Obturatrix, before it perforates the muscles, one is situated exteriorly, which runs toward the Sciatic sinus, to the Musculus Iliacus, the superior part of the Obturator internus, and to the Os Ilium, near its Symphysis with the Os Ischium.

Interiorly, the same Obturator vein sends off another branch, which is distributed to the Ureters, bladder, and internal parts of generation in both sexes. It communicates with the Spermatic veins, and is more considerable in women than in men.

Lastly, the Hypogastric Vein runs backward, and goes out of the Pelvis, above the ligament which lies between the inferior lateral part of the Os Sacrum and Spine of the

the Ischium ; and as it goes out, it is ramified chiefly upward and downward.

It sends a large branch upward to the lower part of the Os Sacrum, and two or more downward ; which running behind the same ligament are distributed to the buttocks, Anus, neighbouring portion of the Musculus Pectineus, and to the external parts of generation, nearly in the same manner with the artery which accompanies them.

The veins that go to the Anus, are termed Hæmorrhoidales Externæ, and they that go to the parts of generation, Pudicæ Internæ. The Externæ Hemorrhoidales communicate with the internal veins of the same name, which come from the small Vena Mesaraica, one of the branches of the Vena Portæ, as we shall see hereafter.

VENA CRURALIS.

The Crural Vein goes out under the Ligamentum Fallopii, on the inside of the Crural Artery, and immediately gives small branches to the Inguinal Glands, the Musculus Pectineus, and parts of generation. These last are termed Pudicæ Externæ, and evidently communicate with the internal veins of the same name.

About an inch below where it leaves the Abdomen, the Crural vein produces a large branch, which runs down anteriorly between the Integuments and the Sartorius, following the direction of that muscle almost all the way to the inside of the thigh.

This branch having afterwards got beyond the condyles of the Os Femoris, runs down between the integuments and inner angle of the Tibia, to the fore part of the inner ankle, and is distributed to the foot. All this large branch is named Vena Saphena, or Saphena major.

After the origin of the Saphena, as the trunk of the Crural vein runs down, it sinks in between the muscles, and is distributed to all the inner or deep parts of the lower extremity, accompanying the Crural artery to the very extremity of the foot, being all along more considerable than the artery, both for capacity and ramifications, a thing very common in the veins.

As the Saphena is a vein of very large extent, we shall here describe it all together, and afterwards return to the Vena Cruralis.

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VENA SAPHENA.

The Vena Saphena, in its passage from the Inguen to the foot, is covered only by the skin and fat. Immediately after its rise, it gives small veins to the inferior Inguinal Glands; and then it gives out others more anteriorly, which running under the integuments, communicate with each other by numerous Areolæ, or masses. Sometimes these communications come all from the rami of one branch.

The Saphena having run down on the thigh, as low as the middle of the Sartorius, sends off to the same side several branches, which communicate with each other, and with the superior branches already mentioned; and as they run down, they communicate again with the trunk of the Saphena.

These two sorts of communications furnish a third collateral kind, from which likewise particular branches are detached, which communicate with each other at different distances all the way to the knee.

Between these upper and lower branches, the Saphena sends backward a particular branch; which, after being distributed to the integuments which cover the Gracilis Internus and Triceps, turns backward; and a little below the ham, runs in among the muscles situated there, and communicates with another branch, which may be termed Saphena minor.

Afterwards the trunk of the great Saphena runs down on the inside of the Tibia, lying always near the skin; and at the upper part of that bone, it sends branches forward, outward and backward.

The anterior branches go to the integuments on the upper part of that leg; the posterior, to those which cover the Gastrocnemii, and communicate with the little Saphena; and the external branches are likewise distributed to the fat and integuments, and having reached as low as the middle of the Tibia, it sends a communicating branch to the trunk of the great Saphena.

From this communication, a branch goes out anteriorly, which runs along the integuments of the Tibia, all the way

way to the outer ankle, having in its passage communicated again with the great Saphena.

As the Saphena runs down on the inside of the Tibia, it sends out a branch near the middle of that bone, which runs up behind the tendons of the Sartorius, Gracilis Internus, and Semi-Nervosus, then between the Tibia and upper end of the Soleus; and is joined by an anastomosis with the Crural Vein.

It likewise detaches to the fore part of the Tibia some branches irregularly transverse; which having been distributed to the Periosteum and bone, communicate with other branches already mentioned.

At the lower part of the Tibia, the Saphena produces a considerable branch, which runs obliquely forward over the joint of the Tarsus toward the outer ankle, sending off several rami which communicate with each other, and with the trunk of the Saphena.

Lastly, the extremity of this trunk passes on the fore side of the inner ankle, and runs irregularly under the skin, along the interstice between the first two Metatarsal bones toward the great toe, where this vein terminates.

Having got below the inner ankle, it sends a branch outward and forward, which runs under, and in some measure accompanies the anterior Tibial Artery. Interiorly it sends another branch, almost from the same place, which passes under the foot, communicating with the external Tibial Vein by irregular arches, from which veins are sent to the toes.

Lastly, before the Saphena terminates at the great toe, it detaches a kind of transverse arch over the Metatarsus, which communicates by several branches with that arch which lies on the joint of the Tarsus, and sends others to the toes. This arch gives off likewise another branch, which runs up behind the outer ankle, and communicates with the Vena Tibialis Externa.

Continuation of the VENA CRURALIS.

The Crural Vein having sent off the Saphena, and the small branches for the Pectineus, &c. as has been said,

runs down on the thigh behind the Crural Artery. Opposite to the little Trochanter, it produces two large short branches, or one which afterwards divides into two, whereof one is anterior, the other posterior.

The anterior branch runs more or less transversely forward, to be distributed to the Vastus Internus, lower part of the Pectineus, and of the second Triceps, and to the other two muscles of the same name, running in between them as it goes from one to the other.

The posterior branch runs more or less transversely backward, and furnishes the Glutæi; Vastus Externus, and beginning of the Biceps.

A little below these two branches, about the upper extremity of the Vastus internus, the Crural Vein produces a branch which runs down on the side of the trunk, covering the Crural Artery, almost as low as the ham, where it is again united to the trunk by an anastomosis, and sometimes it is continued separate a little way down on the leg.

It has the name of Vena Sciatica from the Sciatic nerve which it accompanies.

On the outside of this anastomosis, the Crural Vein gives off a branch which runs backward between the Biceps and neighbouring muscles, and so downward on the backside of the leg a little exteriorly, and very near the skin, all the way to the outer ankle. This vein is termed Saphena minor or externa.

SAPHENA Minor.

The little Saphena having got near the integuments in its course downward, gives out a branch which runs backward, and communicates with the great Saphena about the middle of the backside of the thigh, as has been already observed.

Immediately above and below the ham, this vein sends out other branches, which likewise communicate with the Saphena Major, and having run down about one third part of the backside of the Tibia, it sends off another branch which is afterwards re-united to the trunk.

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About the beginning of the Tendo Achillis, the little Saphenà runs outward in the integuments, toward the outer ankles, where it terminates in cutaneous ramifications sent to every side.

VENA POPLITEA.

The Crural Vein having detached the little Saphena, runs down between the Biceps and the other flexors of the leg, closely accompanied by the Crural Artery, between which and the inner Condyle of the Os Femoris, it is situated.

A little above the ham, it takes the name of Vena Poplitea, and as it runs down betwixt the two Condyles, it gives branches to the Flexor muscles above mentioned, to the lower and posterior parts of both Vassi, and to the fat which lies above the interstice of the two condyles.

It likewise gives off several other branches, one of which runs up laterally between the outer Condyle and the Biceps, and then turning forward, is ramified in the same manner with the artery. Another branch goes backward, sending ramifications to the beginning of the Gastrocnemii, after which it runs down on the backside of these muscles, to the Tendo Achillis.

Near the internal Condyle, the Poplitea sends some lateral branches to extremities of the neighbouring muscles, especially those of the Semi-Nervosus, Semi-Membranosus, &c. Lastly it sends a branch toward the external Condyle, which having run for a small space on the Peronæus Longus, goes back again into the trunk.

The Vena Poplitea runs down immediately behind the muscle of the same name, at the lower part of which, it sends off several ramifications to each side, which divide and unite again in different ways and degrees; and afterwards it loses its name, being divided into three considerable branches, called Tibialis anterior, Tibialis posterior, and Peronæa; of which the Tibialis posterior is most frequently a continuation of the trunk, and the other two like branches.

VENA TIBIALIS Anterior.

The Anterior Tibial Vein having distributed some small branches from its very beginning to the muscles behind the heads of the two bones of the leg, perforates the interosseous ligament from behind, forward, and runs between the superior portions of the *Musculus Tibialis Anticus*, and *Extensor Digitorum communis*.

As soon as it pierces the interosseous ligament, it distributes small superficial branches to the head of the Tibia and Fibula, which run to the joint of the knee, and communicate with the lateral branches of the *Vena Poplitea*, already mentioned.

Afterwards it divides into two or three branches, which run down together on the foreside of the interosseous ligament in company with the anterior Tibial Artery, which they surround at different distances, by small communicating circles.

These branches having reached the lower extremity of the leg, unite in one, which afterwards divides into several, the ramifications of which are distributed to the foot.

A particular branch goes out from the re-united portion which at the lower part of the leg, perforates the interosseous ligament from before backward, and communicates with the *Vena Tibialis posterior*.

VENA TIBIALIS Posterior.

The Posterior Tibial Vein gives off from its beginning, a branch toward the inside, which is distributed to the *Gastrocnemii* and *Soleus*. This vein is named *Suralis*.

Afterward the posterior Tibialis runs down between the *Soleus* and *Tibialis Posticus*, giving branches to each of them. It is divided in the same manner as the Tibialis anterior, into two or three branches, which as they run, surround the corresponding artery, by small communicating circles formed at different distances.

It continues this course in company with the artery as low as the outer ankle, furnishing the *Musculus Tibialis Posticus*, and the long Flexors of the toes. At the lower part of the leg, it communicates with a transverse branch
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of the Saphena, and with the anterior Tibial Vein, in the manner already said.

Lastly, it passes on the inside of the Os Calcis, under the sole of the foot, where it forms the Venæ Plantares, by dividing into several transverse arches, which communicate with each other, and with the Saphena, and send ramifications to the toes, nearly in the same manner as the Arteria Plantaris.

VENA PERONÆA.

The Vena Peronæa is likewise double, and sometimes triple. It runs down on the inside of the Fibula, almost in the same direction with the Arteria Peronæa, which it likewise surrounds at different distances, by communicating branches; after the manner of the Tibialis posterior.

It runs down as low as the outer ankle, communicating several times with the Tibialis posterior, and sending ramifications to the neighbouring portions of the Musculi Peronæi, and long Flexors of the toes.

The last of these communications makes the Venæ Plantares, in some subjects, to appear rather to come from this vein, than from the Tibialis posterior, from which they commonly arise, as we have already observed.

VENA PORTÆ.

The Vena Portæ is a large vein, the trunk which is situated chiefly between the eminences on the lower or concave side of the liver, called Portæ by Anatomists; and from thence this vein has got the general name of Vena Portæ, or Vena Portarum.

It may be considered as made up of two large veins, joined almost endwise by their trunks, from each of which, the branches and ramifications go out in contrary or opposite directions. One of these trunks adheres to the liver, and is ramified in that viscus, its branches accompanying the whole distribution of the hepatic artery.

The other trunk is without the liver, and sends its branches to the Viscera supplied by the rest of the Arteria Cæliaca,

Cæliaca, and by the two Mesentericæ, that is, to the stomach, intestines, pancreas, spleen, mesentery and omentum.

The first portion of this vein, may be termed *Vena Portæ Hepatica*, superior or minor, the trunk of which is commonly known by the name of *Sinus Venæ Portarum*. The other portion may be called *Vena Portæ ventralis*, inferior or major.

The particular trunk of the *Vena Portæ Hepatica* is situated transversely between the broad anterior eminence of the great lobe of the liver, and the root of the *Lobulus*, in a particular scissure, and forms what is called the *Sinus* of the *Vena Portæ*. From this *Sinus* five principal branches go out, which are afterwards divided into millions of ramifications through the whole substance of the liver.

The *Vena Portæ* lays down the common office of a vein, and becomes a kind of artery as it enters, and is again ramified in the liver.

The large trunk of the *Vena Portæ inferior* or *Ventralis*, is situated under the lower or concave side of the liver, and joined by an anastomosis to the *Sinus* of the *Vena Portæ Hepatica*, between the middle and right extremity of that *Sinus*, and consequently at a good distance from the left extremity. From thence it runs down a little obliquely from right to left, behind or under the trunk of the *Arteria Hepatica*, bending behind the beginning of the *Duodenum*, and under the head of the *Pancreas*; its length being about five fingers breadth.

Having reached to the head of the *Pancreas*, this trunk loses the general name of *Vena Portæ*, and terminates in three large principal branches, which are distributed by numerous ramifications, to the *Viscera* already named. The first branch is termed *Vena Mesaraica*, or *Mesaraica Major*; the second, *Splenica*; and the third, *Hæmorrhoidalis interna*, or *Mesaraica minor*.

The *Vena Mesaraica major* appears to be a continuation of the trunk of the *Vena Portæ inferior*. The *Splenica* is a capital branch of that trunk; and the *Hæmorrhoidalis interna* has sometimes a common origin with the *Splenica*, and sometimes is no more than a branch of that vein. In
some

some subjects the Mesaraica major and Splenica appear to arise by an equal bifurcation of the trunk of the inferior Vena Portæ, and in others, the Hæmorrhoidalis arises from the very angle of that bifurcation.

The inferior Vena Portæ, before the formation of these three branches, sends off from the trunk several small rami, which are commonly the Venæ Cysticæ, Hepatica minor, Pylorica, Duodenalis, and sometimes the Gastrica Recta, and Coronaria Ventriculi.

All these small veins sometimes arise separately; and in other subjects, some of them go out by small common trunks. It sometimes happens that several of them do not come immediately from the trunk of the Vena Portæ, but from one of its great branches.

The Cystic Veins run along the Vesicula Fellea from its neck to the bottom; and as they are often no more than two in number, they are called Cysticæ Gemellæ, a name given likewise to the arteries which accompany them. They go out from the right side of the great trunk near its beginning sometimes separately, sometimes by a small and very short common trunk.

The small Hepatic Vein is commonly a branch of one of the Cysticæ, or of their common trunk.

The Vena Pylorica arises from the great trunk almost opposite to the origin of the Cysticæ; and sometimes is only a branch of the right Gastrica. It passes over the Pylorus to the short arch of the stomach, where it is join'd by anastomosis with the Coronaria Ventriculi.

The Duodenal Vein, commonly called Vena Intestinalis, goes out from the great trunk near the Cysticæ, and sometimes from the small common trunk of these veins. It is distributed chiefly to the Intestinum Duodenum, and sends likewise some rami to the Pancreas. There is another vein called also Duodenalis, which is a branch of the Gastrica of the same side.

The Vena Gastrica, or Gastro-Epiploica Dextra, and the Coronaria Ventriculi, come more seldom from the trunk of the Vena Portæ, than from its great branches, with which we therefore chuse to describe them.

VENA MESARAICA Major.

The inferior Vena Portæ, having given off the Splenica, changes its name to that of Mesaraica, or Messarica major, which often appears to be rather a continuation of the trunk, than one of the great branches, as has been already observed.

It bends toward the superior Mesenteric Artery, sending off two veins, and afterwards running up over that artery, it accompanies it in those portions of the Mesentery and Mesocolon which belong to the small intestines, the Cæcum, and right portion of the Colon. As it runs down, it forms an oblique arch almost like that of the artery, which is likewise ramified on both the convex and concave sides, but not so regularly.

The first particular branch from this trunk is called by *Riolan* Vena Colica. It goes out from the anterior part of the trunk, before it joins the artery, and runs directly to the middle of the Colon, where it divides to the right and left, and forms arches. On the left hand it communicates with the superior or ascending branch of the Hæmorrhoidalis; and on the right, with the second branch of the Mesaraica.

This second branch is a little under the first, or Colica anterior, and something more toward the right hand. It may be named Gastro-Colica, and is soon divided into two branches, one superior, the other inferior.

The superior branch of the Vena Gastro-Colica, sends small veins to the head of the Pancreas, and forms the Vena Gastrica, or Gastro-Epiploica Dextra, which goes from the Pylorus to the great curvature of the stomach, and communicates with the Gastrica Sinistra. In its passage it supplies the stomach and omentum, and communicates with the Pylorica, Coronaria Ventriculi, &c. as has been already said; and sometimes it forms the Pylorica.

The inferior branch of the Vena Gastro-Colica, which may be called Colica Dextra, goes to the right portion of the Colon; and from thence to the upper part of that intestine, where it is divided archwise, and communicates
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with the right branch of the Colica anterior, and with a branch of the Vena Cæcalis, as we shall see hereafter.

The trunk of the great Mesaraic Vein sends out sometimes, opposite to the Gastrica, a particular branch to the Omentum, called Epiploica Dextra. But almost immediately before it ascends over the Mesenteric Artery, it produces two large branches very near each other, which pass behind and under the artery, being distributed to the Jejunum and part of the Ilium by numerous ramifications, which form arches and Areolæ like those of the artery.

Afterwards the trunk of the Mesaraica passes over the superior Mesenteric Artery, to which it adheres very closely, and from the convex side of its arch sends out several branches almost in the same manner with the artery; but with this difference, that oftentimes the branches do not arise immediately from the vein in so great numbers; and each of them sends out many more ramifications.

From the concave side of the Mesaraic Vein, a little below the origin of the second branch from the convex side, arises a branch called by *Rislan* Vena Cæcalis, which runs to the beginning of the Colon, crossing one of the branches of the superior Mesenteric Artery.

This Cæcal Vein divides by two arches, the uppermost of which communicates with the lower branch of the Vena Gastro-Colica; the other, after having sent ramifications to the Intestinum Cæcum, and Appendicula Vermiformis, communicates below, with the extremity of the great Mesaraic Vein.

VENA SPLENICA.

The Splenic Vein is one of the three great branches of the Vena Portæ, and may be said in some measure to be a subordinate trunk of that vein. It runs transversely from the right to the left, first under the Duodenum, and then along the lower side of the Pancreas, near the posterior edge.

In this course it gives off several veins, viz. the Vena Coronaria Ventriculi, Pancreaticæ, Gastrica, or Gastro-Epiploica Sinistra. It likewise often gives origin to the
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Hæmorrhoidalis Interna, the third capital branch of the *Vena Portæ*.

It terminates afterwards by a winding course, being divided into several branches that go to the Spleen; one of which produces the small Veins called by the Ancients *Vafa Brevia*.

The *Coronaria Ventriculi*, so called because it surrounds more or less the upper orifice of the stomach, runs along the small arch of that viscus toward the Pylorus, where it joins and becomes continuous with the *Vena Pylorica*. In its passage, it gives several rami to the sides of the stomach, which there form numerous *Areolæ*, and communicate with the veins of the great arch.

It arises pretty often from the beginning of the *Splenica*, and sometimes from the left side of the extremity of the great trunk of the *Vena Portæ*, behind the *Hepatic Artery*; and in that case, it is the most considerable of all the small veins that go out from the great trunk.

The *Venæ Pancreaticæ* are several small branches sent by the *Splenica* to the Pancreas, along its lower side. There are other small *Pancreatic* veins which do not arise from the *Splenica*, as has been said in the description of the *Gastro-Colica*, one of the branches of the great *Mesaraic* trunk.

The left *Gastric* or *Gastro-Epiploic* vein, goes out from the *Splenica* at the left extremity of the Pancreas; from whence it runs to the great extremity of the stomach, and along the great arch, till it meets the *Gastrica Dextra*, which is continuous with the *Sinistra*.

In its passage, it gives several branches to both sides of the stomach, which are distributed by numerous ramifications, form many *Areolæ*, and communicate with the branches of the *Coronaria Ventriculi*.

At a small distance from its origin, this *Gastric* Vein sends out a branch, which is distributed to the Omentum; and on this account it has been called *Gastro-Epiploica*. This branch seems to communicate with the *Hæmorrhoidalis interna*.

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The Vena-Epiploica Sinistra arises at the small extremity of the Pancreas, and is ramified on the Omentum all the way to the Colon, where it communicates with the Hæmorrhoidalis interna. When this vein is wanting, the branch of the left Gastrica already mentioned, supplies its place. It sometimes comes from the most anterior branch, which the Splenica sends to the Spleen.

Lastly, the Vena Splenica reaches the fissure of the Spleen, which it enters through its whole length by several branches, almost in the same manner as the Splenic Artery. It is from the most posterior of these branches that the veins are sent off to the great extremity of the stomach, formerly known by the name of Vasa Brevia, which communicate with the Coronaria Ventriculi and Gastrica Sinistra.

VENA HÆMORRHOIDALIS INTERNA, sive MESARAICA MINOR.

The internal Hæmorrhoidal Vein is one of the three great branches of the Vena Portæ, coming ordinarily from the beginning of the Vena Splenica, and sometimes from the extremity or angle of the bifurcation of the great trunk of the Vena Portæ.

At a small distance from its beginning, it gives to the Duodenum a second Vena Duodenalis, which is sometimes more considerable than the first, or that which comes from the great trunk of the Vena Portæ.

Afterwards it is divided into two branches, one superior or ascending, the other inferior or descending. The first runs to the upper part of the arch of the Colon, where, after many ramifications, it communicates with a branch of the great Mesaraica; with the ramifications of the Gastro-Epiploica Sinistra, and with those of the neighbouring Epiploica.

The inferior branch runs down on the left portion of the Colon, on the lower incurvations of that Intestine, and on the Rectum all the way to the Anus. In this course, it supplies the Mesocolon, and forms arches, which send out numerous small ramifications which surround these intestines. It seems likewise to communicate by some capillary twigs with the left spermatick vein.

This vein has been named Hæmorrhoidalis from the tumours often found at its extremity next the Anus, which are called Hæmorrhoides. The word *Interna* is added to distinguish this vein from the Hæmorrhoidalis externa, which comes from the Vena Hypogastrica, and with which this vein communicates by capillary ramifications. The name of Mesaraica minor agrees to it very well, because of its situation, with respect to the inferior Mesenteric Artery, which is also less than the superior.

Of the N E R V E S.

ALL the Nerves of the human body come originally from the Cerebrum or Cerebellum, by means of the Medulla Oblongata, or Medulla Spinalis. They go out in bundles regularly disposed in pairs, like so many distinct trunks, which are afterwards divided and subdivided into numberless branches and filaments.

The Nerves of the Medulla Oblongata go out, for the most part, through the basis of the Cranium, at holes situated according to their disposition. Those of the Medulla Spinalis pass through the lateral Foramina of all the Vertebrae, and through the great anterior Foramina of the Os Sacrum.

Ten pair of these Fasciculi or nervous trunks are commonly reckoned to the Medulla Oblongata, nine of which go out separately thro' particular holes of the basis cranii; and the tenth, which arises from the extremity of that Medulla, passes through the great Occipital Foramen.

The trunks from the spinal marrow are 24 pair, and may in general be termed Nervi Vertebrales or Intervertebrales. Seven of them are called Cervical Nerves; twelve, Dorsal or Costal, being true Intercostal Nerves; and five, Lumbar: to which must be added five or six pair which pass through the Os Sacrum.

The Medullary substance of which the nervous fibrils are composed, is very tender, and would not be able to resist

sist such forces as the nerves are exposed to even within the bones, were not the Pia Mater and Tunica Arachnoides continued upon them; the former giving them firmness and strength, and the latter furnishing a cellular coat to connect the threads of the Nerves, to let them lie soft and moist, and to support the vessels which accompany them.

But these coats alone would not make the Nerves strong enough to bear the stretching and pressure they are exposed to in their course to the different parts of the body; and therefore, where the Nerves go out at the holes in the Cranium and Spine, the Dura Mater is generally wrapt closely round them, to collect their disgregated fibres into tight firm cords; and that the tension which they may happen to be exposed to may not injure them before they have got this additional coat, it is firmly fixed to the sides of the holes in the bones through which they pass.

To these coats an infinite number of vessels both arteries and veins are distributed; so that after a nice injection the whole cord is tinged with the colour of the injected liquor; but when the fibrils are examined, even with the best microscope, they appear only like so many distinct threads running parallel, without any cavity observable in them.

Nerves are generally lodged in a cellular or fatty substance, and have their course in the interstices of muscles where they are guarded from pressure; but in several parts they are so placed, as if it were intended that they should there suffer the vibrating force of arteries, or the pressure of the contracting fibres of muscles. In their course to the places for which they are destined they generally run as straight as the part over which they are to pass, and their own safety from external injuries will permit, sending off their branches at very acute angles, and consequently running more parallel than the blood vessels. Their distribution is seldom different in the opposite sides of the same subject, nor indeed in any two subjects is there considerable variety found.

Frequently nerves which come out distinct or separate, afterwards conjoin into one fasciculus, under the same

common covering. In some parts where there are such conjunctions, the bulk of the nerves seems much increased, and these knotty oval bodies, called by Fallopius Corpora Olivariæ, and now generally named Ganglions, are formed. The coats of these knots are stronger, thicker, and more muscular than the whole nerves which enter into them would seem to constitute, while the nervous fibrils pass through without any great alteration or change.

How small one of the nervous fibrils is we know not; but when we consider that every, even the most minute part of the body is sensible, and that this must depend on the nerves, which all conjoined would not make a cord of an inch diameter, we must be convinced that their filaments are extremely small.

The nerves sent to the organs of the senses, lose there their firm coats, and terminate in a pulpy substance. The Optic Nerves are expanded into the soft tender webs of the Retinæ. The auditory nerve has scarce the consistence of Mucus in the Vestibulum, Cochlea, and semicircular canals of each ear. The papillæ of the nose, tongue, and skin, are all very tender. The nerves of muscles can likewise be traced till they seem to lose their coats by becoming very soft: From all which, there is reason to conclude, that the muscular nerves are also pulpy at their terminations, though we are not able to prosecute them so far as to discover this by dissection.

Experiments have left no room to doubt of the nerves being the sole organs of sensation. Their mode of operation however is not so easily ascertained. To account for this various hypotheses have been proposed. Some have imagined that the nerves were elastic cords, resembling fiddle strings, and that they conveyed sensations to the brain by a kind of vibratory motion. Others have supposed them to be tubular and to contain a fluid called Animal Spirits, by the motions of which sensation was produced. A third hypothesis supposes the nerves to be only a set of conductors, and that they are pervaded by an elastic fluid called *Æther*, by the oscillations of which all our sensations, &c. are occasioned.

It is not our business here to examine the merit of these different hypotheses. We will venture however to affirm, after all that has been said and wrote upon the subject, that we are still as much in the dark as ever with regard to the manner in which our sensations are produced, and that we are likely to remain so.

Of the P A R T I C U L A R N E R V E S.

N E R V I O L F A C T O R I I.

Of the ten pair of nerves which come from the encephalon, the first is the Olfactory, which long had the name of the Mamillary Processes of the brain, because in the brutes, cows and sheep, which were most commonly dissected by the antients, the anterior ventricles of the brain are extended forwards upon these nerves, and adhere so firmly to them, that they seem to make the upper side of the nerves. Each of them being large, where it begins to be stretched out, and gradually becoming smaller as it approaches the cribriform bone, was imagined to resemble a nipple. Those who mistook the ventricles for part of the nerves, observing the cavity in them full of liquor, concluded, that these olfactory nerves served to convey the superfluous moisture of the brain to the holes of the ethmoid bone through which it passed into the nose.

In man, the ventricles of whose brain are not thus extended forwards, these nerves are small, long, and without any cavity, having their origin from the Corpora Striata, near the part where the internal carotid arteries are about to send off their branches to the different parts of the brain; and in their course under the anterior lobes of the brain, which have each a depression made for lodging them, the human Olfactory nerves become larger, till they are extended to the cribriform bone; where they split into a great number of small filaments, to pass through the little holes in that bone; and being joined by a branch of the fifth pair of nerves, are spread on the membrane of the nose.

The tender structure and sudden expansion of these nerves on such a large surface, render it impossible to trace them far; which has made some authors deny them to be nerves; But when we break the circumference of the cribriform Lamella, and then gently raise it, we may see the distribution of the nerves some way on the membrane of the nose.

The contrivance of defending these long soft nerves from being too much pressed by the anterior lobes of the brain under which they lie, is singular; because they have not only the prominent orbitor processes of the frontal bone to support the brain on each side, with the veins going into the longitudinal sinus, and other attachments bearing it up, but there is a groove formed in each lobe of the brain itself for them to lodge in.

Their splitting into so many small branches before they enter the bones of the skull, is likewise peculiar to them; for generally the nerves come from the brain in disgregated filaments, and unite into cords, as they are going out at the holes of the bones. This contrivance is the best for answering the purpose they are designed for, of being the organ of smelling; for had they been expanded upon the membrane of the nose into a medullary web, such as the optic nerve forms, it would have been too sensible to bear the impressions of such objects as are applied to the nose; and a distribution in the more common way, of a cord sending off branches, would not have been equal enough for such an organ of sensation.

N E R V I O P T I C I.

The 2d Pair of nerves, the Optic, rising from the *Thalami nervorum Opticorum*, make a large curve outwards, and then run obliquely inwards and forwards, till they unite at the fore-part of the *Sella Turcica*: then soon divide, and each runs obliquely forwards and outwards to go out at its proper hole in the sphenoid bone, accompanied with the ocular artery, to be extended to the globe of the eye, within which each is expanded into a very fine cup-like web,

web, that lines all the inside of the eye as far forwards as the ciliary circle, and is universally known by the name of Retina.

Though the substance of this pair of nerves seems to be blended at the place where they are joined; yet observations of people whose optic nerves were not joined, and of others who were blind of an eye from a fault in the optic nerve, or in those who had one of their eyes taken out, make it appear, that there is no such intimate union of substance; the optic nerve of the affected side only being wasted, while the other was large and plump. In many fishes indeed, the doctrine of decussation is favoured; for their optic nerves plainly cross each other, without any union at the part where they are joined in men and most quadrupeds.

These people whose optic nerves were not joined, having neither seen objects double, nor turned their eyes different ways, is also a plain proof, that the conjunction of the optic nerves will not serve to account for either the uniform motions of the eyes, or our seeing objects single with two eyes, though it may be one cause of the remarkable sympathy of the one eye with the other in many diseases.

The Retina of a recent eye, without any preparation, appears a very fine web, with some blood-vessels coming from its center to be distributed on it; but, after a good injection of the arteries that run in the substance of this nerve, as is common to other nerves, it is with difficulty we can observe its nervous medullary substance.

The situation of these vessels in the central part of the optic nerve; the want of medullary fibres here, and the firmness of this nerve before it is expanded at its entry into the ball of the eye, may be the reason why we do not see such bodies, or parts of bodies, whose picture falls on this central part of the Retina.

If these vessels lose their tone, and remain preternaturally distended, no objects affect our Retina, though the eye externally appears sound; this may be one cause of an Amaurosis or Gutta Serena. From a partial distension
of

of these vessels, or paralysis of a part of the Retina, the central part, or the circumference, or any other part of objects, may be lost to one or both eyes.

NERVI MOTORES Oculorum.

The Third Pair rise from the anterior part of the Processus Annularis, and piercing the Dura Mater a little before, and to a side of the ends of the posterior clinoid process of the Sphenoid bone, run along the Receptacula, or cavernous Sinuses, at the side of the Ephippium, to get out at the Foramina Lacera; after which each of them divides into branches of which one, after forming a little ganglion, is distributed to the globe of the eye; the others are sent to the Musculus Rectus of the Palpebra, and to the Attollens, Adductor, Deprimens, and Obliquus Minor muscles of the eye-ball. These muscles being principal instruments in the motions of the eye-lid and eye-ball, this nerve has therefore got the name of the Motor-Oculi.

NERVI PATHETICI.

The Fourth Pair, which are the smallest nerves of any, derive their origin from the back-part of the base of the Testes; and then making a long course on the side of the annular protuberance, enter the Dura Mater a little farther back, and more externally than the third pair, to run also along the Receptacula, to pass out at the Foramina Lacera, and to be entirely spent on the Musculi Trochleares, or superior oblique muscles of the eyes. These muscles being employed in performing the rotatory motions, and the advancement of the eye-balls forward, by which several of our passions are expressed, the nerves that serve them have got the name of Pathetici.

NERVI TRIGEMINI.

The Fifth Pair are large nerves, rising from the annular processes where the medullary processes of the Cerebellum join in the formation of that Tuber, to enter the Dura Mater near the point of the petrous process of the temporal bones; and then sinking close by the Receptacula at the
sides

sides of the Sella Turcica, each becomes in appearance thicker, and goes out of the scull in three great branches.

The first branch of the fifth is the OPTHALMIC, which runs through the Foramen Lacerum to the orbit, having in its passage thither a connection with the sixth pair. It is afterwards distributed to the ball of the eye with the third; to the nose, along with the Olfactory, which the branch of the fifth that passes through the Foramen Orbitarium Internum joins, as was already mentioned in the description of the first pair. This Ophthalmic branch likewise supplies the parts at the internal Canthus of the orbit, the Glandula Lacrymalis, fat, membranes, muscles, and teguments of the eye-lids; its longest farthest extended branch passing through the Foramen Superciliare of the Os Frontis, to be distributed to the fore-head.

The second branch of the fifth pair of nerves may be called MAXILLARIS SUPERIOR, from its serving principally the parts of the upper jaw. It goes out at the round hole of the sphenoid bone, and sends immediately one branch into the channel on the top of the Antrum Maxillare; the membrane of which and the upper teeth are supplied by it in its passage. As this branch is about to go out at the Foramen Orbitarium Externum, it sends a nerve through the substance of the Os Maxillare to come out at Steno's duct, to be distributed to the fore-part of the palate; and what remains of it escaping at the External Orbital hole, divides into a great many branches, that supply the cheek, upper lip, and nostril.

The next considerable branch of the Superior Maxillary nerve, after giving branches which are reflected through the sixth hole of the sphenoid bone, to join the intercostal where it is passing through the scull with the Carotid Artery, and the Portio Dura of the seventh pair, as it passes through the Os Petrosum, is sent into the nose by the hole common to the palate and sphenoidal bone; and the remaining part of this nerve runs in the Palato-Maxillaris canal, giving off branches to the temples and pterygoid muscles, and comes at last into the palate to be lost.

The

The third or MAXILLARIS INFERIOR branch of the fifth pair going out at the oval hole of the sphenoid bone, serves the muscles of the lower jaw, and the muscles situated between the Os Hyoides and Jaw: All the Salivary Glands, the Amygdalæ, and the external ear, have branches from it: It has a large branch lost in the tongue, and sends another through the canal in the substance of the lower jaw to serve all the teeth there, and to come out at the hole in the forepart of the jaw, to be lost in the chin and under lip.

NERVI MOTORES EXTERNI.

The Sixth Pair, which is the smallest except the fourth, rises from the fore-part of the Corpora Pyramidalia; and each entering the Dura Mater some way behind the posterior clinoid process of the sphenoid bone, has a long course below that membrane, and within the Receptaculum at the side of the Sella Turcica, where it is immersed in the blood of the receptacle; it goes afterwards out at the Foramen Lacerum into the orbit, to serve the Abductor muscle of the eye.

In the passage of this nerve below the Dura Mater, it lies very contiguous to the internal Carotid Artery, and to the Ophthalmic branch of the fifth pair of nerves. At the place where the sixth pair is contiguous to the Carotid, a nerve either goes from each of them in an uncommon way, to wit, with the angle beyond where it rises obtuse, to descend with the artery, and to form the beginning of the intercostal nerve, according to the common description; or according to other authors, this nerve comes up from the great Ganglion of the intercostal, to be joined to the sixth here.

The arguments for this latter opinion are, That, according to the common doctrine, this beginning of the intercostal nerve, as it is called, would rise in a manner not so ordinary in nerves. In the next place, it is observed, that the sixth pair is larger nearer to the orbit, than it is before it comes to the place where this nerve is said to go off; and therefore it is probable, that it receives an addition there,

there, rather than gives off a branch. *Lastly*, It has been found, that upon cutting the Intercoastal nerves of living animals, the eyes plainly were affected; they lost their bright water; the gum, or gore, as we call it, was separated in great quantity; the pupil was more contracted; the cartilaginous membrane, at the internal Canthus, came more over the eye; and the eye-ball itself was diminished.

To this it is answered, in defence of the more common doctrine. *1st*, That other branches of nerves go off in a reflected way, as well as this does, supposing it to be the beginning of the intercoastal; and that the reflection would rather be greater, if it is thought to come up from the intercoastal to the sixth. *2^{dly}*, It is denied that this nerve is for ordinary thicker at its fore than its back-part; and if it was supposed to be thickest nearer to the orbit, the conclusion made above could not be drawn from this appearance, because other nerves enlarge sometimes where there is no addition made to them, as in the instance already mentioned of the trunk of the fifth pair while below the Dura Mater. *3^{thly}*, The experiments on living animals shew indeed, that the eyes are affected upon cutting the intercoastal nerve, but not in the way which might have been expected, if the intercoastal had furnished such a share of the nerve that goes to the Abductor muscle of the eye; for it might have been thought, that this muscle would have been so much weakened immediately upon cutting the Intercoastal, that its antagonist the Adductor would have greatly prevailed over it, and have turned the eye strongly in towards the nose; which is not said to be a consequence of this experiment. So that the arguments are still equivocal; and more observations and experiments must be made, before it can be determined with certainty, whether the sixth pair gives or receives a branch here. In the mean time, we shall continue to speak about the origin of the Intercoastal with the generality of Anatomists.

At this place where the Intercoastal begins, the fifth pair is contiguous and adherent to the sixth; and it is generally said, that the Ophthalmic branch of the fifth gives
a branch

a branch or two to the beginning of the Intercoſtal, or receives ſuch from it. Others deny any ſuch communication between them; and thoſe who affirm the communication confeſs, that in ſome ſubjects they could not ſee it.

NERVI AUDITORII.

The Seventh Pair come out from the lateral part of the Annular proceſs, behind where the Medullary proceſſes of the Cerebellum are joined to that Tuber; and each being accompanied with a larger artery than moſt other nerves, enters the Internal Meatus Auditorius, where the two large bundles of fibres, of which it appeared to conſiſt within the ſkull, ſoon ſeparate from each other; one of them entering by ſeveral ſmall holes into the Veſtible, Cochlea, and ſemicircular canals, is ſtretched on this inner Camera of the ear in a very ſoft pulpy ſubſtance; and being never ſeen in the form of a firm cord, ſuch as the other parcel of this and moſt other nerves become, is called PORTIO MOLLIS of the auditory nerve.

The other part of this ſeventh pair paſſes through Galen's Foramen Cæcum, or Fallopius's Aquæduct, in its crooked paſſage by the ſide of the Tympanum; in which paſſage, a nerve ſent from the Lingual branch of the inferior Maxillary nerve, along the outſide of the Tuba Euaſtichiana, and croſs the cavity of the Tympanum, where it has the name of Chorda Tympani, is commonly ſaid to be joined to it. The very acute angle which this nerve makes with the fiſh, or the ſudden violent reflection it would ſuffer on the ſuppoſition of its coming from the fiſh to the ſeventh, appears unuſual; whereas, if we ſuppoſe that it comes from the ſeventh to the fiſh, its courſe would be more in the ordinary way, and the Chorda Tympani would be eſteemed a branch of the ſeventh pair going to join the fiſh, the ſize of which is increaſed by this acquisition.

This ſmaller bundle of the ſeventh gives branches to the muſcles of the Malleus, and to the Dura Mater, while it paſſes through the bony crooked canal, and at laſt comes out in a firm chord named PORTIO DURA, at the
end

end of this canal, between the Styloid and Mastoid processes of the temporal bone, giving immediately filaments to the little Oblique muscles of the head, and to those that rise from the Styloid process. It then pierces through the Parotid gland, and divides into a great many branches, which are dispersed in the muscles and teguments that cover all the side of the upper part of the neck, the whole face and Cranium, as far back as the temples, including a considerable part of the external ear.

NERVI SYMPATHETICI MEDII, seu PAR VAGUM.

The Eight Pair of nerves rise from the lateral bases of the Corpora Olivaria in disgregated fibres; and as they are entering the anterior internal part of the holes common to the Os Occipitis and Temporum, each is joined by a nerve which ascends within the Dura Mater from the tenth of the head, the first, second and inferior cervical nerves: This, every body knows, has the name of the NERVUS ACCESSORIUS. When the two get out of the scull, the Accessorius separates from the eighth, and descending obliquely outwards, passes through the Sterno-mastoideus muscle, to which it gives branches, and afterwards terminates in the Trapezius and Rhomboid muscles of the Scapula. In this course it is generally more or less joined by the second cervical nerve.

The large Eighth Pair, soon after its exit, gives nerves to the tongue, Larynx, Pharynx, and Ganglion of the Intercoastal nerve, and being disjoined from the ninth and intercoastal, to which it adheres closely some way, runs straight down the neck behind the Internal Jugular Vein, and at the external side of the Carotid Artery. As it is about to enter the Thorax, a large nerve goes off from the eighth of each side: This branch of the right-side turns round from the fore to the back part of the Subclavian Artery, while the branch of the left-side turns round the great curve of the Aorta, and both of them mounting up again at the side of the Oesophagus, to which they give branches, are lost at last in the Larynx. These are called the RECURRENT Nerves, which we are desir'd to shew in the operation

ration of Bronchotomy, though their deep situation protects them sufficiently.

The muscles of the Larynx being in a good measure supplied with nerves from the recurrents, it is to be expected, that the cutting of them will greatly weaken the voice, though it will not be entirely lost, so long as the superior branches of the eighth pair are entire.

The eighth pair, above and at or near the place where the recurrent nerves go off from it, or frequently the recurrents themselves, send off small nerves to the Pericardium, and to join with the branches of the intercostal that are distributed to the heart ; but their size and situation are uncertain.

After these branches are sent off, the Par Vagum on each side descends behind the great branch of the Trachea, and gives numerous filaments to the lungs, and some to the heart in going to the Oesophagus. The one of the left side running on the fore-part of the Oesophagus, communicates by several branches with the right one in its descent to be distributed to the stomach: The right one gets behind the Oesophagus, where it splits and rejoins several times before it arrives at the stomach, to which it sends nerves ; and then being joined by one or more branches from the left trunk, they run towards the Cæliac Artery, there to join into the great Semilunar Ganglion formed by the two intercostals.

NERVI HYPOGLOSSI.

The Ninth Pair of nerves comes from the inferior part of the Corpora Pyramidalia, to go out of the scull at their proper holes of the Occipital Bone. After their egress they adhere for some way firmly to the eighth and intercostal ; and then sending a branch, that in many subjects is joined with branches of the first and second cervical nerves, to be distributed to the Thyroid Gland and muscles on the fore-part of the Trachea Arteria, the ninth is lost in the muscles and substance of the tongue. Some have thought this nerve, and others have esteemed the third branch of the fifth pair of nerves, to be the proper
gusta-

gustatory nerve. No observation or experiments prove either opinion, or assure us, that both nerves do not serve for tasting and for the motion of the tongue.

NERVI SUB-OCCIPITALES.

The Tenth Pair rises in separate threads from the sides of the spinal marrow, to go out between the Os Occipitis and first vertebra of the neck. After each of them has given branches to the great ganglion of the intercostal, 8th, 9th, and 1st cervical nerves, it is distributed to the straight, oblique, and some of the extensor muscles of the head. Whether the name of the tenth of the head, or of the first vertebral, ought to be given to this pair of nerves, is of no such consequence as to deserve a debate, tho' it has some of the marks of the spinal nerves, to wit, its being formed of filaments proceeding from both the fore and back part of the Medulla, and a little ganglion being formed where these filaments meet.

In the description of the sixth pair we followed the usual way of speaking among anatomists, and called that the beginning of the intercostal nerve which comes out of the scull; and therefore shall here subjoin a cursory description of this nerve, notwithstanding its much larger part is composed of nerves coming out from the spinal marrow. There is no greater incongruity in point of method to say, that the nerve we are describing receives additions from others that have not been described, than it is to repeat in the description of a great many nerves, that each of them gives branches to form a nerve which we are ignorant of; which is all the difference between describing the intercostal before or after the spinal nerves.

The branch reflected from the sixth pair, joined possibly by some filaments of the ophthalmic branch of the fifth, runs along with the internal carotid artery through the crooked canal formed for it in the Temporal bone, where the little nerve is very soft and pappy, and in several subjects divides and unites again, and is joined by one or more branches from the fifth, particularly of its superior maxillary branch, before it comes out of the scull.

As soon as the nerve escapes out of this bony canal, it is connected a little way with the eighth and ninth; then separating from these, after seeming to receive additional nerves from them, it forms a large ganglion, into which branches from the tenth of the head, and from the first and second cervical, enter. From this ganglion the nerves come out again small to run down the neck along with the carotid Artery, communicating by branches with the cervical Nerves, and giving nerves to the muscles that bend the head and neck.

As the Intercostal is about to enter the Thorax, it forms another ganglion, from which nerves are sent to the Trachea and to the heart; these designed for the heart joining with the branches of the eighth, and most of them passing between the two great arteries and the auricles, to the substance of that muscle. The intercostal after this consisting of two branches, one going behind, and the other running over the fore-part of the Subclavian Artery, forms a new ganglion where the two branches unite below that artery, and then descending along the sides of the Vertebrae of the Thorax, receives branches from each of the dorsal nerves; which branches appearing to come out between the ribs, have given the name of Intercostal to the whole nerve.

Where the addition is made to it from the fifth dorsal nerve, a branch goes off obliquely forwards; which being joined by such branches from the sixth, seventh, eighth, and ninth dorsal, an anterior trunk is formed, and passes between the fibres of the Appendix Musculosa of the Diaphragm, to form, along with the other intercostal and the branches of the eighth pair, a large Semilunar Ganglion, situated between the Cæliac and superior Mesenteric Arteries; the roots of which are as it were involved in a sort of nervous net-work of this ganglion, from which a great number of very small nervous threads run out to be extended on the surface of all the branches of those two arteries, so as to be easily seen when any of the arteries are stretched, but not to be raised from them by dissection; and thus the Liver, Gall-bladder, Duodenum, Pancreas, Spleen,

Spleen, Jejunum, Ilium, and a large share of the Colon, have their nerves sent from this great Solar Ganglion or Plexus.

Several fibres of this Ganglion, running down upon the Aorta, meet with other nerves sent from the posterior trunk of the intercostal, which continues its course along the sides of the Vertebrae, they supply the Glandulae Renales, Kidneys, and Testes in men, or Ovaria in women; and then they form a net-work upon the inferior Mesenteric Artery where the nerves of the two sides meet, and accompany the branches of this artery to the part of the Colon that lies in the left side of the belly, and to the Rectum, as far down as to the lower part of the Pelvis.

The Intercostal continuing down by the side of the Vertebrae of the loins, is joined by nerves coming from between these Vertebrae, and sends nerves to the organs of generation and others in the Pelvis, being even joined with those that are sent to the inferior extremities.

N E R V I V E R T E B R A L E S.

The Spinal Nerves rise generally by a number of disgregated fibres from both the fore and back part of the Medulla Spinalis, and soon after form a little knot or ganglion, where they acquire strong coats, and are extended into firm cords. They are distinguished by numbers, according to the Vertebrae from between which they come out; the superior of the two bones forming the hole thro' which they pass, being the one from which the number is applied to each nerve.

The FIRST CERVICAL Pair of Nerves comes out between the first and second Vertebrae of the neck; and having given branches to join with the tenth pair of the head, the second Cervical and Intercostal, and to serve the muscles that bend the neck, it sends its largest branches backwards to the extensor muscles of the head and neck; some of which piercing through these muscles, run up on the Occiput to be lost in the teguments here; and many fibres of it advance so far forward as to be connected with

the fibrils of the first branch of the fifth pair of the head, and of the Portio Dura of the Auditory Nerve.

The **SECOND CERVICAL** is soon joined by some branches to the ninth of the head and intercostal, and to the first and third of the neck; then has a large branch that comes out at the exterior edge of the Sterno-mastoideus Muscle, where it joins with the Accessorius of the eighth pair; and is afterwards distributed to the Platysma Myoides, teguments of the side of the neck and head, Parotid Gland, and external ear, being connected to the Portio Dura of the Auditory nerve, and to the first Cervical. The remainder of this second Cervical is spent on the Levator Scapulæ and the extensors of the neck and head. Generally a large branch is here sent off to join the Accessorius of the eighth pair, near the superior angle of the Scapula.

In opening the external Jugular Vein, no operator can promise not to touch some of the cutaneous branches of this nerve with the lancet; which occasions a sharp pricking pain in the mean time, and a numbness of the skin near the orifice for some time after.

The **THIRD PAIR** of the neck passes out between the third and fourth Cervical Vertebrae; having immediately a communication with the second, and sending down a branch, which being joined by a branch from the fourth Cervical, forms the **PHRENIC Nerve**. This descending enters the Thorax between the Subclavian Vein and Artery; and then being received into a groove formed for it in the Pericardium, it has its course along this Capsula of the heart, till it is lost in the middle part of the Diaphragm. The right Phrenic has a straight course; but the left one is obliged to make a considerable turn outwards to go over the prominent part of the Pericardium, where the point of the heart is lodged. The middle of the Diaphragm scarce could have been supplied by any other nerve which could have had such a straight course as the Phrenic has.

The other branches of the third Cervical Nerve are distributed to the muscles and teguments at the lower part
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of the neck and top of the shoulder. No wonder then that an inflammation of the liver or spleen, an abscess in the lungs adhering to the Diaphragm, or any other cause capable of irritating the Diaphragm, should be attended with a sharp pain on the top of the shoulder as well as wounds, ulcers, &c. of this muscle itself. — If the irritation of this muscle is very violent, it may occasion that convulsive contraction of the Diaphragm which is called an Hiccough; and therefore an Hiccough in an inflammation of the liver has been justly declared to be an ill symptom.

An irritation of the Thoracic nerves which produces sneezing, may sometimes free the Phrenic nerves from any spasm they occasion; so that sneezing sometimes takes away the Hiccough; and a derivation of the fluid of the nerves any other way may do the same thing: Or, the Hiccough may also be sometimes cured, by drawing up into the nose the smoke of burning paper or other acrid fumes, swallowing pungent or aromatic medicines, and by a surprise, or any other strong application of the mind in thinking, or in distinguishing objects: Or, when all these have failed, it has been put away by the brisk Stimulus of a blistering plaister applied to the back.

The **FOURTH CERVICAL Nerve**, after sending off that branch which joins with the third to form the Phrenic, and bestowing twigs on the muscles and glands of the neck, runs to the arm-pit, where it meets with the **FIFTH, SIXTH, and SEVENTH Cervicals**, and **FIRST DORSAL**, that escape in the interstices of the *Musculi Scaleri*, to come at the arm pit, where they join, separate, and rejoin, in a way scarce to be rightly expressed in words; and after giving several considerable nerves to the muscles and teguments which cover the Thorax, they divide into several branches, to be distributed to all the parts of the superior extremity. Seven of these branches we shall describe under particular names.

NERVUS SCAPULARIS

The *Scapularis* runs straight to the *Cavitas Semilunata* of the upper *Costa* of the *Scapula*, which is a hole in the
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recent subject by a ligament being extended from one angle of the bone to the other, giving nerves in its way to the muscles of the Scapula. When it has passed this hole, it supplies the Supra Spinatus muscle; and then descending at the anterior root of the Spine of the Scapula, it is lost in the other muscles that lie on the Dorsum of that bone.

NERVUS ARTICULARIS.

The Articularis sinks downwards at the Axilla, to get below the neck of the head of the Os Humeri, and to mount again at the back-part of it; so that it almost surrounds the articulation, and is distributed to the muscles that draw the arm back, and to those that raise it up.

NERVUS CUTANEUS.

The Cutaneus runs down the fore-part of the arm near the skin, to which it gives off branches; and then divides on the inside of the fore-arm into several nerves, which supply the teguments there, and on the palm of the hand.—In opening the Basilic Vein of the arm, at the ordinary place, the same symptoms are sometimes produced as in opening the external Jugular Vein, and from a like cause, to wit, from hurting a branch of this Cutaneous Nerve with the lancet.

NERVUS MUSCULO-CUTANEUS.

The Musculo-Cutaneus, or Perforans Casseri, passes through the Coraco Brachialis Muscle; and, after supplying the Biceps Flexor Cubiti and Brachizæus Internus, passes behind the tendon of the Biceps, and over the Cephalic Vein, to be bestowed on the teguments on the outside of the fore-arm and back of the hand.—This nerve is sometimes hurt in opening the Cephalic Vein, and causes pain and numbness for a short time.

NERVUS MUSCULARIS.

The Muscularis has a spiral course from the Axilla, under the Os Humeri, and backward to the external part of that bone, supplying by the way the Extensor Muscles of the
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the fore-arm to which it runs between the two *Brachii Muscles* and within the *Supinator Radii Longus*.—At the upper-part of the fore-arm, it sends off a branch, which accompanies the *Supinator Longus* till it comes near the wrist, where it passes obliquely over the *Radius*, to be lost in the back of the hand and fingers.—The principal part of this nerve pierces through the *Supinator Radii Brevis*, to serve the muscles that extend the hand and fingers, whose actions are not injured when the *Supinator* acts.

NERVUS ULNARIS.

The *Ulnaris* is extended along the inside of the arm; to give nerves to the muscles that extend the fore-arm and to the teguments of the elbow: Towards the lower part of the arm, it slants a little backward to come at the groove behind the internal Condyle of the *Os Humeri*, through which it runs to the *Ulna*: In its course along this bone, it serves the neighbouring muscles and teguments; and as it comes near the wrist, it detaches a branch obliquely over the *Ulna* to the back of the hand, to be lost in the convex part of several fingers. The larger part of the nerve goes straight forward to the internal side of the *Os Pisiforme* of the wrist; where it sends off a branch which sinks under the large tendons in the palm, to go cross to the other side of the wrist, serving the *Musculi Lumbricales* and *Interossei*, and at last terminating in the short muscles of the thumb and fore-finger. What remains of the *Ulnar* nerve after supplying the short muscles of the little-finger, divides into three branches; whereof two are extended along the sides of the sheath of the tendons of the flexors of the little-finger, to furnish the concave side of that finger; and the third branch is disposed in the same way upon the side of the ring-finger next to the little-finger.

NERVUS RADIALIS.

The *Radialis* accompanies the humeral artery to the bending of the elbow, serving the flexors of the cubit in its way; then passing through the *Pronator Radii Teres* muscle,

muscle, it gives nerves to the muscles on the fore-part of the fore-arm and continues its course near to the Radius, bestowing branches on the circumjacent muscles. Near the wrist, it sometimes gives off a nerve which is distributed to the back of the hand, and the convex part of the thumb and several of the fingers, instead of the branch of the muscular. The larger part of this nerve, passing behind the annular ligament of the wrist, gives nerves to the short muscles of the thumb; and afterwards sends a branch along each side of the sheath of the tendons of the flexors of the thumb, fore-finger, middle-finger, and one branch to the side of the ring-finger, next to the middle one, to be lost on the concave side of those fingers.

Though the Radial nerve passes through the Pronator muscle, and the Muscular nerve seems to be still more unfavourably placed within the Supinator Brevis; yet the action of these muscles don't seem to have any effect in hindering the influence of these nerves; for the fingers or hand can be bended while pronation is performing vigorously, and they can be extended while supination is exercised.

The manner of the going off of these nerves of the fingers, both from the Ulnar and Radial, is, that a single branch is sent from the trunk to the side of the thumb and little-finger, farthest from the other fingers; and all the rest are supplied by a trunk of a nerve, which splits into two some way before it comes as far as the end of the Metacarpus, to run along the sides of different fingers that are nearest to each other.

It might have been observed, that, in describing the posterior branches of the Ulnar and Muscular Nerves, we did not mention the particular fingers, to the convex part of which they are distributed. Our reason for this omission is, the uncertainty of their distribution; for though sometimes these posterior branches go to the same fingers, to the concave part of which the anterior branches of the Ulnar and Radial are sent, yet frequently they are distributed otherwise.

The TWELVE DORSAL nerves of each side, as soon as they escape from between the Vertebræ, send a branch

branch forward to join the intercostal, by which a communication is made among them all; and they soon likewise give branches backwards to the muscles that rise the trunk of the body, their principal trunk being extended outwards to come at the furrow in the lower edge of each rib, in which they run toward the anterior part of the Thorax, between the internal and external intercostal muscles, giving off branches in their course to the muscles and teguments of the Thorax.

The FIRST Dorsal, as was already observed, is particular in this, that it contributes to form the brachial nerves; and that the two branches of the intercostal, which come down to the Thorax, form a considerable ganglion with it.

The SIX lower Dorsal nerves give branches to the Diaphragm and abdominal muscles.

The TWELFTH joins with the first Lumbar, and bestows nerves on the *Musculus Quadratus Lumborum* and *Iliacus Internus*.

As the intercostal is larger in the Thorax than any where else, and seems to diminish gradually as it ascends and descends, there is cause to suspect that this is the trunk from which the superior and inferior pairs are sent as branches.

The FIVE LUMBAR nerves on each side communicate with the intercostal and with each other, and give branches backwards to the loins.

The FIRST communicates with the last Dorsal, sends branches to the abdominal muscles, to the *Psoas* and *Iliacus*, and to the teguments and muscles on the fore-part of the thigh; while its principal branch joins with the other nerves to form the Crural nerve.

The SECOND LUMBAR nerve passes through the *Psoas Muscle*, and is distributed nearly in the same way as the former: As is also the THIRD.

Branches of the second, third, and fourth, make up one trunk, which runs along the fore-part of the Pelvis; and passing in the notch at the fore-part of the great hole common to the *Os Pubis* and *Ischium*, is spent on the adductor

ductor muscles, and on the teguments on the inside of the thigh. This nerve is called the **OBTURATOR** or **POSTERIOR CRURAL NERVE**.

By united branches from the first, second, third, and fourth lumbar nerves, a nerve is formed, that runs along the Psoas Muscle, to escape with the external Iliac vessels out of the Abdomen, below the tendinous arcade of the external oblique muscle. This nerve, which is named the **ANTERIOR CRURAL**, is distributed principally to the muscles and teguments on the fore-part of the thigh. A branch, however, of this nerve runs down the inside of the leg to the upper part of the foot, keeping near to the Vena Saphæna; in opening of which with a lancet at the ancle, the nerve is sometimes hurt, and occasions sharp pain at the time of the operation, and numbness afterwards.

The remainder of the Fourth Lumbar and the fifth join in composing the largest nerve of the body; which is soon to be described.

Whoever attends to the course of these lumbar nerves, and of the spermatic vessels and nerves upon the Psoas muscle, with the oblique passage of the Ureter over that muscle, will not be surprised, that when a stone is passing in this canal, or even when it is inflamed, the trunk of the body cannot be raised erect, without great pain; or that the skin of the thigh becomes less sensible, and the thigh is drawn forward, and that the testicle often swells and is drawn convulsively towards the ring of the Abdominal muscles.

The Sixth Pair of the false **VERTEBRÆ** consist each of small posterior branches sent to the hips, and of large anterior branches.

NERVUS SCIATICUS.

The first, second, and third, after coming through the three upper holes in the fore part of the Os Sacrum, join together with the fourth and fifth of the loins, to form the largest nerve of the body, which is well known by the name of Sciatic or Ischiatic Nerve: This, after sending large nerves to the different parts of the Pelvis,
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and to the external parts of generation and the Podex, as also to the muscles of the hips, passes behind the great tuber of the Os Ischium, and then over the quadrigemini muscles to run down near to the bone of the thigh at its back-part, giving off nerves to the neighbouring muscles and teguments. Some way above the ham, where it has the name of the Poplitæus Nerve, it sends off a large branch that passes over the Fibula, and sinking in among the muscles on the anterior external part of the leg, runs down to the foot, to be lost in the upper part of the larger toes, supplying the neighbouring muscles and teguments every where in its passage.

The larger branch of the Sciatic, after giving branches to the muscles and teguments about the ham and knee, and sending a large cutaneous nerve down the calf of the leg, to be lost at last on the outside of the foot and upper part of the lesser toes, sinks below the Gemellus muscle, and distributes nerves to the muscles on the back of the leg; among which it continues its course, till passing behind the internal Malleolus, and in the internal hollow of the Os Calcis, it divides into the two Plantar nerves: The internal of which is distributed to the toes in the same manner that the radial nerve of the hand serves the concave side of the thumb, and fingers; and the external Plantar is divided and distributed to the sole of the foot and toes, nearly as the Ulnar nerve is in the palm of the hand, and in the concave part of the fingers.

Several branches of these nerves, that serve the inferior extremities, pierce through muscles.

The FOURTH, which, with the two following, is much smaller than the three superior, soon is lost, in the Vesica Urinaria and Intestinum Rectum.

The FIFTH comes forward between the extremities of the Os Sacrum and Coccygis, to be distributed principally to the Levatores Ani.

The SIXTH, which some think to be only a production of the Dura Mater, advances forward below the broad shoulders of the first bone of the Os Coccygis, and is lost in the Sphincter Ani and teguments covering it.

The branches of the four last Cervical nerves, and of the first Dorsal, which are bestowed on the superior extremities, and the two Crurals, with the Sciatic, which are distributed to the inferior extremities, are much larger proportionally to the parts they serve, than the nerves of the trunk of the body, and especially of the Viscera, are; and for a very good reason, that in the most common necessary actions of life, a sufficient quantity of the nervous influence may be supplied to the muscles there, which are obliged to perform more frequent and violent contractions than any other parts do.

The size of the nerves of the inferior extremities seems larger proportionally than in the superior extremities; the inferior extremities having the weight of the whole body to sustain, and that frequently at a great disadvantage.

What the effect is of the nerves here being injured, we see daily, when people happen, by sitting wrong, to compress the Sciatic nerve, they are incapable for some time after to support themselves on the affected extremity: And this is still more remarkable in the Sciatic or hip-gout, in which the member is not only weakened, but gradually shrivels and wastes.

F I N I S.





